Mental Health Services Act

Early Intervention Evaluation

Final Report: Cluster 2

Programs Serving Youth, Transition-age Youth, and Younger Adults with Prodromal Symptoms or Experiencing First Onset of Psychosis (Deliverable 2E)

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Introduction

Mental Health Services Act (MHSA) requirements for Prevention and Early Intervention (PEI) programs describe early intervention services as intended for individuals and families for whom a mental health condition is in its early manifestation.[1] To provide greater understanding of the impact of PEI funding across the state on early manifestation of mental illness, the Mental Health Services Oversight and Accountability Commission (MHSOAC) contracted with UCLA's Center for Healthier Children, Families, and Communities (UCLA – CHCFC) to investigate the impact of clusters of similar types of early intervention services implemented across the state. This report describes results of evaluating a cluster of early intervention programs serving youth, transition-age youth, and younger adults with prodromal symptoms or experiencing first onset of psychosis (herein referred to as Cluster 2), supported by the PEI component of the MHSA.

Identifying Early Intervention Programs for Study

To guide the identification of programs appropriate for study, the evaluation team developed four criteria for establishing the appropriateness of an early intervention program for inclusion in each study cluster. These criteria were developed in accordance with the study purposes specified by the MHSOAC and through consultation with stakeholders.

Evaluation Inclusion Criteria

1. *Early intervention programs:* Programs selected for the evaluation were focused on early intervention, defined as serving individuals with early onset of a mental illness or emotional disturbance. Programs that include a mix of both prevention and early intervention elements were eligible for inclusion; however, the focus of the study is on the early intervention elements of programs.
2. *PEI funding:* Programs selected provide early intervention services at least partially supported by MHSA PEI funds; programs that use PEI funds only for training and outreach, for example, did not meet this criterion.
3. *Consumer population identified by clinical assessment:* Programs selected serve the early onset population of interest, as determined by a systematic assessment (i.e., validated measure) that uses clinical cut-offs. Further, the clinical cut-offs are consistent with the definition of the consumer population of interest (e.g., showing clinical signs of early onset of a mental disorder or emotional disturbance).
4. *Program components and implementation:* Programs selected employ promising or evidence-based treatment components found to be effective for the consumer populations under study, as identified in a thorough review of the literature conducted by the evaluation team (i.e., peer reviewed literature published in the last 5 years). In addition, program staff documented (e.g., reports, training materials, service records, and communication with the evaluation team) that they delivered selected practices with fidelity.

For Cluster 2, the evaluation team conducted a careful process of identifying county programs that meet the inclusion criteria and serve youth, transition-age youth, and younger adults with prodromal symptoms or experiencing first onset of psychosis. Programs selected for inclusion are detailed in the following section of this report.

A Stakeholder-Informed Evaluation

To ensure the most relevant, useful, and methodologically sound evaluation approaches were employed, the evaluation team worked with counties, their early intervention programs, and a diverse group of stakeholders (herein referred to as the Evaluation Advisory Group), made up of practice/research experts, county/provider agency staff, and individuals with lived experience of mental illness and treatment in the public sector (see Appendix A). The evaluation team collaborated with counties, Cluster 2 programs, and the Evaluation Advisory Group throughout the study development and implementation to: 1) identify early intervention programs meeting cluster inclusion criteria, 2) identify data elements available to examine PEI program participant outcomes, 3) focus analysis approaches, and 4) provide input regarding the conclusion and implications of results.

Cluster 2 – Early Intervention Programs Serving Youth, Transition-age Youth, and Younger Adults with Prodromal Symptoms or Experiencing First Onset of Psychosis

Early Intervention Population

Cluster 2 addresses youth, transition-age youth (TAY), and younger adults (ages 12-30) with prodromal symptoms or those experiencing first onset of psychosis (i.e., first break). The onset of schizophrenia or bipolar disorder typically occurs in late adolescence or early adulthood; therefore, the focus on youth, transition-age youth, and younger adult populations is appropriate. Recent research confirms that the onset of psychosis is typically preceded by an extended prodromal period in which recognizable but sub-acute symptoms begin to appear. Manifestations of the disorder develop gradually, and it is only after these prodromal symptoms reach a threshold of severity and sustainability that a person is said to experience first onset of psychosis.[2]

Psychosis is a symptom or feature of mental illness typically characterized by radical changes in personality, impaired functioning, and a distorted or nonexistent sense of objective reality. A large majority (80%–90%) of patients with schizophrenia report a variety of symptoms, including changes in perception, cognition, affect, and behavior before becoming psychotic. Nonspecific symptoms and negative symptoms (e.g., social withdrawal and flat affect) typically develop first before positive symptoms (e.g., hallucinations and delusions) appear.

In psychotic illnesses, the prodrome is the period characterized by symptoms that represent a change from a person's premorbid functioning up until the onset of frank psychotic features. In cases where the prodrome is the beginning stage of schizophrenia, psychosis will inevitably follow in the absence of intervention. However, while most cases of schizophrenia are preceded by a prodrome, it is less clear how often a psychotic illness develops in patients who experience prodromal symptoms.[3] Thus, psychosis is not an unavoidable outcome of the prodrome, but prodromal symptoms do put individuals at greater risk for a psychotic episode.[4]

Early Intervention Program Models

Several early detection and intervention programs for psychotic disorders have been established around the world in the past few years.[5,6] Such programs have built an evidence base indicating that individuals at high risk for psychosis can be reliably identified prior to disease onset or early in its manifestation. Furthermore, multiple studies show that shorter delays between onset of symptoms and treatment are correlated with better outcomes across a range of measures and with increased likelihood of remission.[7]

Research demonstrates that an array of intervention strategies can be effective in preventing illness progression and in improving functional outcomes. Promising or evidence-based programs share these core intervention strategies:[8]

- Outreach and community education to reduce stigma and increase help seeking
- Careful screening
- Structured assessment using a valid/reliable instrument
- Individual therapy
- Family psycho-education (including multifamily therapy)
- Case management
- Support to address educational/occupational, housing, and social needs
- Targeted medication, if needed, at the lowest dosage possible
- Peer support for consumer and family members

Based on our statewide investigation of early detection and intervention programs for youth, transition-age youth, and younger adults with early symptoms or onset of psychosis, a number of counties are implementing one of three early intervention program models covering the core components described above. The three programs share common goals of intervening as early as possible in order to prevent the development of disease-related deficits and treatment-related side effects, to empower individuals to become active participants in their treatment, and to help people progress toward recovery meeting their personal, social, and occupational goals. Each is described below.

Portland Identification and Early Referral (PIER)

The Portland Identification and Early Referral model is designed for youth and transition-age youth (ages 12-25).[9] It has a strong evidence base, including a five-year national multisite evaluation funded by the Robert Wood Johnson Foundation.[10] The PIER model was designed with a sole focus on clients in the prodromal phases and provides services for a two-year period. The model uses a three-pronged approach of community outreach, assessment, and treatment to reduce symptoms, improve function, and decrease relapse. Specific details of these practice components within PIER are described below.

- Outreach: The PIER model relies heavily on community outreach and empowering community and family members to help detect early signs of severe mental illness in youth, transition-age youth, and younger adults. Outreach efforts are aimed at establishing and maintaining a community network of "early identifiers."
- Assessment: PIER uses the Structured Interview for Prodromal Syndromes (SIPS), a reliable instrument developed at the PRIME Clinic at Yale University, to measure the onset, frequency, duration, and intensity of symptoms to determine severity and function. The assessment component of PIER includes a screening phase (potential clients are identified via phone screenings), the SIPS assessment, and follow-up SIPS administration to monitor symptoms at six and 12 months.
- Treatment: The PIER model provides various treatment components, including family psycho-education, supported education and employment, and medication when needed.

For the PIER model, measurement routinely occurs at baseline, six-month intervals, and discharge.[11] The following measures are often used to track participant outcomes:

- Structured Interview for the Prodromal Syndrome (SIPS)
- Global Functioning: Social and Role Scales
- Global Assessment of Functioning Scale (GAF)
- Heinrich Quality of Life Scale (QLS)
- MATRICS Cognitive Consensus Battery
- Presence of Psychosis Scale
- AX Continuous Performance Task
- Premorbid Adjustment Scale (PAS)
- Positive and Negative Syndrome Scale (PANSS)
- Structured Clinical Interview for DSM-IV Axis I Disorders: Clinician Version.

Early Diagnosis and Preventative Treatment of Psychosis Illness (EDAPT or SacEDAPT)

The Early Diagnosis and Preventative Treatment of Psychosis Illness (EDAPT[12] or SacEDAPT[13]) program is available for youth and transition-age youth between the ages 12-25. SacEDAPT serves those who have experienced the onset of psychotic symptoms in the past year, those experiencing prodromal symptoms of psychosis, and youth who have shown recent deterioration and have a parent or sibling with a psychotic disorder. SacEDAPT provides services for two years focusing on reducing and managing symptoms and distress and improving individuals' ability to achieve success in independent roles through appropriate education and employment opportunities. The practice components within SacEDAPT include:

- *Community-based outreach and education:* Following the PIER model, SacEDAPT performs community outreach and education to help detect early signs of severe mental illness in youth and young adults.
- *Comprehensive Psychiatric Assessment:* SacEDAPT uses the SIPS to measure the onset, frequency, duration, and intensity of symptoms to determine severity and function.
- *Treatment:* SacEDAPT provides various treatment components, including individual psycho-education and support groups, multi-family psycho-education and support groups, medication management, supported education and employment, and peer advocate support.

The EDAPT clinic administers several outcome measures, some of which overlap with those administered by PIER. SacEDAPT administers the following instruments at baseline, six-month intervals, and program discharge:

- Structured Interview for the Prodromal Syndromes (SIPS)
- Global Functioning: Social and Role Scales
- Global Assessment of Functioning Scale (GAF)
- Clinical Global Impression – Schizophrenia Version
- Schedule for Affective Disorders and Schizophrenia for School-Age Children (K-SADS)
- Structured Clinical Interview for DSM-IV Axis I Disorders: Clinician Version.

Prevention and Recovery in Early Psychosis (PREP)

The Prevention and Recovery in Early Psychosis (PREP) program is a community partnership program for early intervention and treatment of psychosis and schizophrenia.[14, 15, 16] PREP serves youth, transition-age youth, and younger adults (ages 14-30, varying by site) who have had their first major psychotic episode within the previous two years or who, on the basis of the PREP

diagnostic interview, are at high risk for having their first episode within two years. PREP is a two-year program that endeavors to create countywide systems of effective intervention with the following components:

- *Public Education and Outreach:* PREP's public education efforts are designed to reduce stigma, educate the public and frontline service providers, inform the public about resources, and provide hope to people struggling with the disease.
- *Intake and Assessment:* PREP offers telephone screening by a licensed clinician and comprehensive diagnostic assessment within seven days for those referred. Assessment and diagnosis are based on the SIPS and extended by a strengths-based care management assessment of depression, trauma, substance abuse, and affective dysregulation.
- *Treatment:* PREP provides various treatment elements, including individual cognitive behavioral therapy (CBT) for early psychosis,[17] multi-family group therapy, care management, education and employment support, cognitive rehabilitation, substance abuse services, and medication management.

The PREP program collects consumer self-report and staff report data using the following standardized instruments at baseline and three month intervals:[18]

- Structured Interview for the Prodromal Syndromes (SIPS)
- Patient Health Questionnaire (PHQ-9)
- Generalized Anxiety Disorder 7 (GAD-7)
- Altman Self-Rating Mania Rating Scale (ASRM)
- Medication Adherence Rating Scale (MARS)
- Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST) – two items
- Working Alliance Inventory (WAI)
- Global Assessment of Functioning Scale (GAF)
- Global Functioning: Social and Role Scales
- Scale for the Assessment of Negative Symptoms – Quick Version (QSANS)
- Scale for the Assessment of Positive Symptoms – Quick Version (QSAP)
- Working Alliance Inventory (WAI)
- Hospitalizations prior to enrollment and quarterly thereafter
- Psychiatric ER visits
- Arrests
- Employment and/or school situation
- Housing situation.

Cluster 2 Evaluation Methods

Design

A pre-post design approach was primarily employed to assess the impact of Cluster 2 programs. The evaluation focused on assessing outcomes measured by these programs and in line with MHSA PEI goals and outcomes[19] (see Table 2 for MHSA PEI goals and outcomes to be assessed). For MHSA PEI goals and outcomes that could not be addressed by existing program data, the evaluation team attempted to facilitate additional data collection (i.e., identification of appropriate

instruments, protocols, and training materials) with Cluster 2 programs. While many programs expressed interest in additional data collection, and the evaluation team consulted with counties regarding measurement options for PEI outcomes, lack of resources and time prevented any programs from collecting additional information within the scope of this project. Cluster 2 programs are collecting outcome data at pre, mid, and post-intervention points for many measures. As such, the evaluation team employed a pre-post no control group design, within and across county programs, fiscal years, and demographic groups, with the estimation that service populations greater than 20 would provide sufficient power to detect moderate effects. To help address the lack of an appropriate control or comparison group for this cluster of programs, the pattern and size of effects found across programs and service years was examined to identify the statistical and practical significance of effects. This design was employed utilizing secondary analysis of existing program data, so as to limit burden on individual counties and their programs.

Sample

A purposive sample was identified for Cluster 2 that included youth, transition-age youth, and younger adults (ages 12-30) who had prodromal symptoms or experienced first onset of psychosis, were participating in one of the eight county early intervention programs that met study inclusion criteria (i.e., PEI-funded early intervention program, one of the selected promising or evidence-based practices, consumers identified via clinical assessment), and had agreed to participate in the study (see Table 1). Parents were included in the service population under study given that they were either part of the treatment process, or provided demographic, service, and outcome information for their youth or TAY. Data was received for program service FY 2010-11 to 2012-13, and annual program population sizes range from 4 to 147.

Table 1. Cluster 2 Counties & Programs Participating

County	Program / Practice
Alameda	PREP
Contra Costa	PIER – "First Hope"
Sacramento	SacEDAPT
San Diego	PIER – "Kickstart"
San Francisco	PREP
San Mateo	PREP
Santa Clara	PIER
Ventura	First Onset Program (PIER)

Data Collection Procedures

Data for the Cluster 2 evaluation was collected from multiple sources, including county representatives, early intervention program staff, local program evaluators and other technical assistance and support agencies (e.g., local evaluators) that collect and maintain relevant information regarding program participant outcomes. The evaluation team worked with counties to systematically identify data currently collected, and outcomes for which additional data collection may be appropriate, through a measurement matrix tailored for each county program and completed in collaboration with program staff. For participating programs that submitted a measurement matrix (final submission deadline was June 30th, 2013), the evaluation team reviewed the provided information and submitted specific data requests (i.e., measures, instruments, items, and service years). Participating counties then provided feedback regarding the data they concurred was available and appropriate for capturing the impact of their early intervention programs on specified MHSA PEI goals.

The evaluation team shared memoranda specifying the request and timeline for participation, and data sharing protocol (e.g., confidentiality and formatting), with counties, their programs, and other evaluation support staff (e.g., local evaluators). As each county, program, and support organization has a somewhat unique protocol for data sharing and collaboration, agreements were arranged via memoranda or more formal contractual agreements.

The evaluation team created an aggregated Cluster 2 database in which information from disparate sources, and in varying formats, was prepared for analysis (e.g., reviewed for missing or out-of-range information, recoded for consistency across counties and programs, and aggregate variables created). To ensure data quality and reliability, the evaluation team addressed any concerns that arose as part of ongoing discussions with programs and evaluation support organizations. However, the evaluation team also conducted an independent review of data quality and reliability, described in the Analytic Approach section below.

Measures

Participating Cluster 2 programs provided information regarding which of their available measures would address goals emphasized by the MHSOAC and other stakeholders as important for establishing the effectiveness of interventions intended to prevent or limit negative outcomes resulting from early onset mental illness (see Table 2 for measurement areas). Based upon MHSA PEI goals and outcomes identified in statute[20] and the data provided by Cluster 2 programs, the outcomes currently feasible to analyze were determined by factors such as service years available, participant population size, and data collection instruments administered. Table 2, below, details MHSA PEI goals and outcomes that are currently feasible to evaluate based upon the data collected via the instruments administered by Cluster 2 programs.

Table 2. Measures of Cluster 2 PEI Consumer Outcomes

MHSA PEI Goals	Outcomes	Measures	Instruments
Prevent mental illness from becoming severe and disabling[21]	Change in the severity of mental illness	Assessment of depression	Patient Health Questionnaire (PHQ-9)
		Assessment of functioning	Children's Functional Assessment Rating Scale (CFARS)
			Global Assessment of Functioning (GAF)
Improve timely access to services for underserved populations	Data not directly available to assess "access". As a proxy rates of service use among underserved populations were assessed	Rate of service use among underserved groups (i.e., based upon gender and race/ethnicity) compared to estimation of need for mental health services[22]	Program intake assessment
			Collaborative Psychiatric Epidemiology Survey[23]
Reduce incarcerations	Involvement with the justice system (i.e., arrest or incarceration)	Arrest or incarceration	County Developed Assessment
Reduce school failure or dropout	Change in school participation	Current education status	County Developed Assessment

MHSA PEI Goals	Outcomes	Measures	Instruments
Reduce unemployment	Employment status	Employment Status	County Developed Assessment
Reduce homelessness	Change in housing status	Housing status	County Developed Assessment
Reduce rate of mental health service initiation	Rate of mental health service initiation per 100,000 people	Number of consumers reporting mental health service initiation (i.e., 24-hour services, outpatient services, and day services) per 100,000 people	Client Services Information System (CSI)

Analytic Approach

Review of data completeness and quality was conducted upon receipt of data from each early intervention program that is the focus of Cluster 2. Data was reviewed for completeness, including number of consumers and assessment points, service years included, and the level of missing information[24]. In cases where more than ten percent of values within a key data field (i.e., necessary for assessment of a MHSA PEI goal or outcome) were missing, the evaluation team immediately followed-up with the relevant parties to gather additional information or justification for missing or out of range information. Where missing data could be filled after follow-up with counties or programs, this was done; otherwise analysis was conducted of complete data relevant to the outcomes assessed in this report. When information collected via one instrument was inconsistent with that assessed via another instrument across more than ten percent of cases, the evaluation team followed-up with the relevant parties to rectify inconsistencies or understand them more fully. Participating programs were very cooperative in this process.

To what extent are MHSA PEI goals impacted as a result of program implementation or program participation? To answer this question analyses focused on change in MHSA PEI goals and outcomes across time, or in comparison to appropriate reference groups (e.g., the target service population, or unserved/underserved groups). Outcomes assessed at multiple points across the treatment process (e.g., severity of mental illness) allowed for analysis of individual level changes across two assessment points. Outcomes measured in a cross-sectional manner (e.g., demographics) allowed for comparison among relevant service populations (e.g., county demographic makeup). Research questions and hypotheses specific to each MHSA PEI goal and outcome investigated are detailed in Table 3, below.

Table 3. Research Questions and Hypotheses

MHSA Goals	Outcomes	Research Questions	Hypotheses
Prevent mental illness from becoming severe and disabling	Change in the severity of mental illness	Has the severity of mental illness changed (i.e., initial assessment to final assessment) as a result of Cluster 2 program participation?	The severity of mental illness will decrease, from initial to final assessment, on average among program participants
Improve timely access to services for underserved	Data not directly available to assess "access". As a proxy	Are underserved groups (i.e., racial/ethnic minority groups, gender) utilizing Cluster 2	Underserved groups will be found to utilize Cluster 2 services at rates that are in proportion to the

MHSA Goals	Outcomes	Research Questions	Hypotheses
populations	rates of service use among underserved populations were assessed	services at rates that are in proportion to the estimated need for service in the county in which they are served?	estimation of need for service in the county in which they are served
Reduce incarcerations	Involvement with the justice system (i.e., arrest or incarceration)	Has involvement with the justice system been reduced as a result of participation in a Cluster 2 program?	Reported arrest or incarcerations will decline from initial to final assessment, among program participants
Reduce school failure or dropout	Change in school participation	Has participation in school changed as a result of Cluster 2 program participation?	School participation will increase, from initial to final assessment, on average among program participants
Reduce unemployment	Employment status	Has employment status changed as a result of Cluster 2 program participation?	Employment status will improve, from initial to final assessment, on average among program participants
Reduce homelessness	Change in housing status	Has housing status changed as a result of participation in a Cluster 2 program?	Homelessness will decline, from initial to final assessment, among program participants
Reduce rate of mental health service initiation	Rate of mental health service initiation per 100,000 people	Do rates of mental health service initiation (i.e., 24-hour services, outpatient services, and day services) in counties implementing PEI programs differ from pre to post PEI program initiation?	Rates of mental health service initiation in counties implementing PEI programs will be lower post, compared to pre, PEI program initiation, among more intensive services (i.e., 24 hr.) rather than less intensive services (i.e., day or outpatient)
		Do rates of mental health service initiation (i.e., 24-hour services, outpatient services, and day services) differ between participating counties and the rest of the state?	Rates of mental health service initiation will be lower among participating counties, compared to the rest of the state, among more intensive services (i.e., 24 hr.) rather than less intensive services (i.e., day or outpatient)

Assessment of change in severity of mental illness required analysis of data generated via distinct instruments administered across programs, across years and at different intervals, to produce assessments of common outcomes across the study cluster. To overcome these challenges, the possibility of aggregating instruments (i.e., scales or subscales) measuring common constructs was explored. However, analysis of aggregated instruments revealed the psychometric properties of the data were altered to the extent that unreliable or practically uninterpretable results were produced. Alternatively, effect sizes (e.g., mean change scores and correlations) were calculated so as to provide understanding of the relative size of effects.[25] Change in outcomes were analyzed within and across years, and with and without reference to measurement intervals, to identify any patterns of change in outcomes that may be due to factors such as program maturation or measurement effects. Analyses revealed that participant outcomes were not significantly influenced by program maturation or potential measurement effects, and so are not presented in this report. Participants without outcome assessments at multiple points could thus not be assessed for change, so cross-sectional outcome analyses are presented in this report as available and appropriate.

Are underserved populations impacted by PEI programs differently? To the extent possible based on available data, and given sufficient program service population and demographic subgroups sizes (e.g., greater than 5 as a general rule), analyses of change in mental health severity and service utilization were conducted within and between gender and race/ethnic groups. Programs included in this cluster indicated a particular emphasis on service outreach to underserved groups (e.g., males, Asian, and American Indian consumers). Thus, it was expected that these groups would show service utilization rates proportional to their estimated need, despite their traditionally underserved status. While differential impact among gender and minority groups was investigated, unfortunately Cluster 2 programs did not collect systematic information regarding the economic situation of participants and their families.

Are Early Intervention Programs Impacting Rates of Mental Health Service Initiation at the Population Level? The evaluation team adapted McFarlane's population-level analysis approach, to explore changes in the rates of mental health service initiation (i.e., outpatient, day, and 24-hours services) pre to post early intervention program participation.[26] Analysts utilized county-level mental health service data in the CSI database to identify rates of mental health service initiation for participating Cluster 2 counties and all other California Counties. Rates of mental health service initiation (i.e., number of reports of consumers receiving services for the first time) were calculated per 100,000 individuals within each fiscal year so as to create comparable rates across counties and time. The key comparisons in this analysis were 1) pre-program implementation period versus post-program implementation period (e.g., interrupted time series analysis), and 2) rates among Cluster 2 counties versus the rest of the state. The goal of this analysis was to identify any population level impact of Cluster 2 programs on initiation rates of three distinct modes of service, each intended to address different levels of severity of mental illness.

Characteristics of PEI Programs and Participants Available for Cluster 2 Analysis

Table 4. PEI Program Participants Available for Cluster 2 Analysis, by County

County	Participants (%)
Alameda	52 (7.4%)
Contra Costa	160 (2.7%)
Sacramento	87 (12.4%)
San Diego	171 (24.3%)
San Francisco	111 (15.8%)
San Mateo	35 (5.0%)
Santa Clara	67 (9.5%)
Ventura	21 (3.0%)
Total	**704 (100.0%)**

Table 5. PEI Program Participants Available for Cluster 2 Analysis, by Fiscal Year

Fiscal Year	Participants (%)
FY 08-09	4 (0.6%)
FY 09-10	27 (3.8%)
FY 10-11	77 (10.9%)
FY 11-12	207 (29.4%)
FY 12-13	268 (38.1%)
FY 13-14	13 (1.8%)
Not Determinable	108 (15.3%)
Total	**704 (100.0%)**

Table 6. Gender of PEI Program Participants Available for Cluster 2 Analysis

Gender	Participants (%)
Female	203 (28.8%)
Male	355 (50.4%)
Missing	146 (23.7%)
Total	**704 (100.0%)**

Table 7. Race/Ethnicity of PEI Program Participants Available for Cluster 2 Analysis

Race/Ethnicity	Participants (%)
Asian	30 (4.3%)
African American	55 (7.8%)
Hispanic	125 (17.8%)
Mixed	9 (1.3%)
Pacific Islander	9 (1.3%)
White	102 (14.5%)
Other	7 (1.0%)
Unknown	367 (52.1%)
Total	**704 (100.0%)**

Analyses and results of Cluster 2 PEI program goals and outcomes are presented below. Analysis of programs' efforts to prevent mental illness from becoming severe and disabling are presented first, followed by rates of service use compared to estimated need, justice involvement, education, employment, housing, and rates of mental health service initiation. Interpretation of findings is presented alongside relevant tables/figures. Discussion and implications are then provided in the "Discussion & Implications" section.

Analysis of Cluster 2 PEI Program Goals & Outcomes

MHSA PEI Goal	Prevent illness from becoming severe and disabling
Outcome Assessed	Change in the severity of mental illness
Primary Research Question	Is there a change in the severity of mental illness (i.e., initial assessment to final assessment) among Cluster 2 program participants?

Analysis of programs' efforts to prevent mental illness from becoming severe and disabling are presented separately for each instrument that Cluster 2 programs utilized to measure severity of mental illness. Instruments used to assess severity of mental illness (see Table 9, below) were analyzed separately so as to maintain the psychometric properties and clinical significance of scores and results. For each assessment instrument, clinical guidelines for scoring are presented and described first in order to convey the practical meaning of average changes in severity of mental illness between the first and last assessment points available for each participant. Throughout the results, the term "clinically significant" is used to describe average changes that cross clinical score guidelines (i.e., movement from one clinical category to another across time points). Average changes and their clinical significance are presented overall, among instrument subscales, and among demographic subgroups (only for measures with enough available data to support further breakdown by demographic characteristics). Only consumers with data from two assessment points are included in this analysis. Cells sizes less than 5 have been redacted for

confidentiality purposes. Interpretation of results is discussed separately for each instrument and overall. Discussion and implications are then provided in the "Discussion & Implications" section.

Measurement: *Change in Severity of Mental Illness*

Table 8. Cluster 2 Counties & Programs that Provided Data for Analysis of *Change in Severity of Mental Illness*

County	Program / Practice	Provided Data
Alameda	PREP	GAF
Contra Costa	PIER	GAF
Sacramento	EDAPT	GAF
San Diego	PIER	CFARS
San Francisco	PREP	PHQ-9
San Mateo	PREP	PHQ-9
Santa Clara	PIER	GAF
Ventura	PIER	GAF

Table 9. Instruments & Measures Available for Cluster 2 Analysis of *Change in Severity of Mental Illness*

Instruments	Measures
Patient Health Questionnaire (PHQ-9)	Total Depression Scale Score
Global Assessment of Functioning (GAF)	Total Scale Score
Children's Functional Assessment Rating Scale (CFARS)	Depression and Anxiety Rating Scores

Results: *Change in Severity of Mental Illness*

Patient Health Questionnaire (PHQ-9)

To assess the impact of the PREP programs implemented across the San Francisco and San Mateo PREP programs, change in total PHQ-9 scores from initial to follow-up assessment, relative to clinical ranges (see Table 10), was examined overall and by gender and race/ethnicity.

The Patient Health Questionnaire (PHQ-9) is a 9-item questionnaire intended to measure depression severity. Its values range from zero to 27, and specific value ranges indicate different levels of depression severity (see Table 10). The validity of this instrument was established by Martin, et al. (2006)[27]. They examined a representative sample of 2,066 subjects between 14 and 93 years old. The results from the analysis support the construct validity of the PHQ depression scale, which seems to be a useful tool to recognize not only major depression but also sub-threshold depressive disorder in the general population.

Lowe et al. (2004) [28] investigated the sensitivity to change of the PHQ-9 in three groups of patients whose depression status either improved, remained unchanged, or deteriorated over time. Of three cohorts of medical outpatients, with an equal distribution of major depressive disorder, other depressive disorders, or no depressive disorder, 167 (82.7%) responded to the PHQ-9 and the Structured Clinical Interview for DSM-IV (SCID). They were completed at both baseline and follow-up. Depression diagnoses from the SCID were used as the criterion standard to divide patients into subgroups with (a) improved depression status, (b) unchanged depression status, and (c) deteriorated depression status. This study demonstrated the ability of the PHQ-9 to detect depression outcome and changes over time. Table 10 displays clinical guidelines for interpreting PHQ-9 score.[29]

Table 10. PHQ-9 Guidelines for Assessing Depression Scale Scores

Scores	Depression Severity
1 – 4	Minimal Depression
5 – 9	Mild Depression
10 – 14	Moderate Depression
15 – 19	Moderately Severe Depression
20 – 27	Severe Depression

PHQ-9 scores were analyzed overall and by gender and ethnicity, as shown in Table 11.

Table 11. PHQ-9 Ratings Overall, by Gender and by Race/Ethnicity

Scale	N	Time 1 Mean (SD)	Time 2 Mean (SD)	Mean Difference (SE)
Overall	56	9.02 (6.64)	7.11 (5.92)	-1.91 (.765)
Gender				
Female	**20**	**10.10 (7.31)**	**8.55 (6.55)**	**-1.55 (1.32)**
Male	36	8.42 (6.26)	6.31 (5.48)	-2.11 (.948)
Race/Ethnicity				
Hispanic	8	6.50 (5.23)	5.13 (4.02)	-1.38 (2.13)
White	16	9.06 (5.07)	5.94 (3.99)	-3.13 (1.17)
Asian	8	7.25 (4.33)	6.25 (4.23)	-1.00 (1.16)
Black				

Bold values indicate clinically significant change.

Overall, at time 1 PREP program participants in San Francisco and San Mateo were on average at the border between the mild depression and moderate depression range of scores. At time 2, participants reduced their scale scores, with participants on average in the middle of the mild depression range of scores. This reduction in average PHQ-9 score over time is an encouraging sign, but it does not indicate a clinically significant change in depression. Females had higher average PHQ-9 scores at both time points compared to males. At initial assessment point females were in the moderately depressed range of scores on average but improved to the mild depression range of scores at follow-up assessment, which indicates a clinically significant improvement in depression. Males were, on average, in the mild depression range at both assessment points, and did not report clinically significant change in depression (see Table 11).

When comparing across race/ethnicity, Asian, Hispanic, and White participants did not display clinically significant changes in depression, with both groups scoring in the lower range of mild depression scores at both assessment points. The few Black participants assessed (thus results redacted from Table 11) reported clinically significant improvement in depression between assessment periods, scoring in the moderate depression range on average at initial assessment, but improved to the mild depression range at follow-up. These findings provide some indication that the PREP programs in San Francisco and San Mateo positively impacted participants overall, but gender and race/ethnic groups differently. However, the small service population assessed via the PHQ-9 suggests patterns should be interpreted tentatively, as patterns may change as these programs grow, or additional participants are assessed with this instrument.

The relationship between program duration and change in severity of mental illness was analyzed to provide another indicator of program impact. There were 21 participants with matched PHQ-9 scores as well as intake and discharge dates. The number of days between intake and discharge dates was calculated to serve as a measure of program duration. Change scores were calculated subtracting PHQ scores at time 2 from scores at time 1 so that positive scores indicate a reduction in depression severity. These change scores were correlated with program duration to test a relationship between program length and reduction of symptoms. However, a statistically significant relationship was not found between program length and reduction of depressive symptoms. While this result suggests that amount of program participation may not be related to change in depression severity, these programs are relatively standard, resulting in a limited range of length of participation among respondents. Other multidimensional measures of program participation or dosage, or a larger study population would allow for a more complete and sensitive analysis of a potential relationship between level of participation and change in severity of depression.

Global Assessment of Functioning (GAF)

To assess the impact of the PREP, PIER, and EDAPT programs in Alameda, Contra Costa, Sacramento, Santa Clara, and Ventura, change in GAF scores from initial to follow-up assessment, relative to clinical ranges (see Tables 12 and 13), was examined.

The Global Assessment of Functioning (GAF) scale is a clinician-derived measure of an individual's psychological, social, and occupational (including school) functioning. Clinicians assign each individual a score ranging from 1 to 100, designed to indicate the nature and current severity of the individual's present difficulties, with lower scores indicating greater degrees of functional impairment. Scores are assigned using a set of 10 descriptive anchors that range from "persistent danger of severely hurting self or others" to "superior functioning in a wide range of activities" (see Table 12). Evidence suggests that the GAF possesses good concurrent validity and inter-rater reliability.[30] Furthermore, GAF ratings tend to be higher upon psychiatric discharge than at admission to treatment, implying consistency between the scale and other criteria used in treatment decisions.[31]

Table 12. Interpretation of GAF Scores

Assessment of Functioning	Score Range
Superior Functioning. No symptoms.	91-100
Absent or minimal symptoms, good functioning in all areas, interested and involved in a wide range of activities	81-90
Symptoms are transient and expectable reactions to psychosocial stressors	71-80
Some mild symptoms, or some difficulty in social, occupational, or school functioning	61-70
Moderate symptoms, or moderate difficulty in social, occupational, or school functioning	51-60
Serious symptoms, or any serious impairment in social, occupational, or school functioning	41-50
Some impairment in reality testing or communication, or major impairment in several areas	31-40
Behavior is considerably influenced by delusions or hallucinations, or serious impairment in communication or judgment	21-30
Some danger of hurting self or others, or occasionally fails to maintain minimal personal hygiene, or gross impairment in communication	11-20
Persistent danger of severely hurting self or others, or persistent inability to maintain minimal personal hygiene, or serious suicidal act with clear expectation of death	1-10

GAF scores were analyzed overall, and between gender and ethnic groups (see Table 13).

Table 13. GAF Ratings Overall, by Gender, and by Race/Ethnicity

Scale	N	Time 1 Mean (SD)	Time 2 Mean (SD)	Mean Difference (SE)
Overall	167	42.87 (22.15)	47.51 (15.88)	4.63 (1.73)
Gender				
Female	**49**	**50.59 (15.07)**	**44.33 (11.53)**	**-6.27 (2.60)**
Male	**50**	**53.00 (15.96)**	**45.84 (13.17)**	**-7.16 (2.05)**
Unknown	**68**	**29.87 (24.45)**	**51.03 (19.52)**	**21.16 (2.60)**
Race/Ethnicity				
Hispanic	23	46.65 (8.14)	49.70 (7.54)	3.04 (1.45)
White	9	48.89 (10.13)	49.33(9.13)	0.44(1.31)
Other	9	43.89(10.40)	44.11(8.37)	0.22 (1.85)
Unknown	**126**	**41.68 (24.90)**	**47.22 (17.70)**	**5.54 (2.26)**

Bold values indicate clinically significant change.

Participants in PREP, PIER, and EDAPT programs, assessed via the GAF, reported small average improvement in functioning, but did not indicate clinically significant changes on average, across participants. Respondents with known gender information (both males and females) displayed clinically significant decreases in functioning on average, but this is misleading given that respondents with missing gender information reported clinically significant improvement in functioning on average. The overall increase in average GAF score is likely a more accurate indicator of typical participant outcomes, and suggests moderate improvement in functioning, but not clinically significant, on average among participants (see Table 13). Hispanic participants reported the largest average gains in functioning when compared with White participants or those of other races/ethnicities, but no race/ethnic group displayed clinically significant changes. Thus, participants in PREP, PIER, and EDAPT programs, assessed via the GAF, reported moderate indications of improvement, but improvement in functioning did not rise to the level of clinical significance.

There were not sufficient participants with program length or dosage data to determine if there was a relationship between change in functioning and program length or dosage.

Children's Functional Assessment Rating Scale (CFARS)

To assess the impact of the PIER program in San Diego, change in CFARS subscale scores (depression and anxiety) from initial to follow-up assessment, relative to clinical ranges (see Table 14), was examined.

The Children's Functional Assessment Rating Scale (CFARS) is intended to provide a brief rating assessment of children in 16 domains.[32] However, for the present analysis only the depression and anxiety scales were relevant to this PEI outcome. For both CFARS scales scores range from 0 – 9, with higher scores indicating greater problems in each domain. The developers of CFARS provide anchors for each of the 9 possible rating scores.

Table 14. CFARS Guidelines for Assessing Depression and Anxiety Scale Scores

Score	Depression or Anxiety Severity
1	No Problem
2	Less than Slight
3	Slight Problem
4	Slight to Moderate
5	Moderate Problem
6	Moderate to Severe
7	Severe Problem
8	Severe to Extreme
9	Extreme Problem

CFARS depression and anxiety subscale scores were analyzed overall (see Table 13).

Table 15. CFARS Depression and Anxiety Subscale Ratings

Scale	N	Time 1 Mean (SD)	Time 2 Mean (SD)	Mean Difference (SE)
CFARS Depression Rating	16	4.19 (.911)	4.19 (.981)	.000 (.129)
CFARS Anxiety Rating	16	3.94 (1.34)	3.94 (1.12)	.000 (.183)

The relatively few PIER program participants assessed via relevant CFARS subscales (i.e., depression and anxiety) did not report clinically significant average change in severity of mental illness. Most participants were not rated any differently between the two time points.

Because of the relatively small number of participants who completed the CFARS, demographic subgroup analysis was not tenable. There was also not any information regarding program length for those providing CFARS data, so no examination of a possible relationship between program length and change in scale scores could be conducted.

Overall, analysis of PHQ-9 and GAF scores revealed a largely consistent pattern of improvement in the severity of mental illness. Analysis of CFARS scores did not show a similar pattern. Collectively these results suggest that most Cluster 2 PREP, PIER, and EDAPT programs contributed to the prevention of participants' mental illness from becoming severe and disabling.

MHSA PEI Goal	Improve timely access to services for underserved populations
Outcome Assessed	Rates of service utilization among underserved populations
Primary Research Question	Are underserved groups (i.e., racial/ethnic minority groups, gender) utilizing Cluster 2 services at rates that are in proportion to the estimated need for service in the county in which they are served?

Participating Cluster 2 programs did not systematically collect information (e.g., demographics or socio-economic status) regarding all individuals who attempted to access their services (e.g., sought

out or inquired about available services). Thus, as a proxy outcome, rates of service use among underserved populations were examined in relation to estimates of need for service in each participating Cluster 2 County. Rates of service use in each county, by gender and race/ethnicity, are presented alongside estimates of need for service[33] in each Cluster 2 County, so as to provide the reader with a relative perspective of Cluster 2 service use rates. Estimates of need for mental services were derived through an indirect estimation approach.[34] Indirect needs-assessment methods are based upon evidence of linkages between measures of need for services (in this case Collaborative Psychiatric Epidemiology Survey data[35]) and individual demographic or area social-indicator data (e.g., decennial census).[36] Interpretation of results is discussed separately for each demographic category and overall. Discussion and implications are then provided in the "Discussion & Implications" section.

Measurement: *Service utilization among underserved populations*

Table 16. Cluster 2 Counties & Programs that Provided Data for Analysis of *Service Utilization among Underserved Populations*

County	Program / Practice	Provided Data
Alameda	PREP	Demographics
Contra Costa	PIER	Demographics
Sacramento	EDAPT	Demographics
San Diego	PIER	Demographics
San Francisco	PREP	Demographics
San Mateo	PREP	Demographics
Santa Clara	PIER	Demographics
Ventura	EDIPP	Demographics

Table 17. Instruments & Measures Available for Analysis of *Service Utilization among Underserved Populations*

Instruments	Measures
County Developed Assessment	Demographic Information
Collaborative Psychiatric Epidemiology Survey[37]	Indirect estimation of need for mental health services, by Sex, Race/Ethnicity, and CA County[38]

Cluster 2 participants were compared across gender and ethnic groups for each participating county. These proportions were compared to the gender and ethnic makeup of those in need of mental health services in each respective county. It should be noted that the total estimated need of mental health services in each county is calculated for those less than 25 years of age. This age range does not perfectly align with the age range served by each Cluster 2 program, so estimates of need for mental health services may be slightly overestimated.

Results: *Service utilization among underserved populations*

Gender

Table 18. Proportional Representation of Cluster 2 Participants and Those in Need of Mental Health Services

County	Female				Male			
	Estimated Need for Mental Health Services		Cluster 2 Participants		Estimated Need for Mental Health Services		Cluster 2 Participants	
	n	%	n	%	n	%	n	%
Alameda	7,406	59.2%			5,095	40.8%		
Contra Costa	4,655	59.2%	67	41.9%	3,208	40.8%	93	58.1%
Sacramento	10,962	58.8%	23	26.4%	7,688	41.2%	64	73.6%
San Diego	20,958	58.2%	30	30.0%	15,024	41.8%	70	70.0%
San Francisco	2,233	55.3%	31	28.4%	1,805	44.7%	78	71.6%
San Mateo	2,119	58.7%	11	31.4%	1,493	41.3%	24	68.6%
Santa Clara	6,489	57.4%	41	61.2%	4,809	42.6%	26	38.8%
Ventura	4,603	56.7%			3,515	43.3		

In each county, the majority of the total population estimated to be in need of mental services was female, ranging from 56.7% to 59.2% across counties. However, in every county except for Santa Clara, the majority of participants served by Cluster 2 counties were male, with Sacramento serving participants that were 73.6% male. In Santa Clara, 61.2% of participants were female, more in line with the estimated population in need of mental health services for that county. Several factors may account for these discrepancies, including the possibility that programs have emphasized recruitment of males that have previously been found to seek help less often.[39]

Race/Ethnicity

Table 19. Proportional Race/Ethnicity of PEI Program Participants and Respective County Populations

County	White				Asian				Black				Hispanic				Other			
	Need for Service		Cluster 2		Need for Service		Cluster 2		Need for Service		Cluster 2		Need for Service		Cluster 2		Need for Service		Cluster 2	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Alameda	2,642	21.1%			1,862	14.9%			2,739	21.9%			4,409	35.3%			851	6.8%		
Contra Costa	2,578	32.8%			535	6.8%			1,177	15.0%			3,220	41.0%			351	4.5%		
Sacramento	7,490	40.1%	26	30.2%	2,037	10.9%	7	8.1%	2,546	13.7%	26	30.2%	4,975	26.7%	19	22.1%	1,602	8.6%	8	9.3%
San Diego	12,317	34.2%	19	22.6%	1,863	5.2%	2	2.4%	1,953	5.4%	8	9.5%	18,020	50.1%	50	59.5%	1,829	5.1%	5	6.0%
San Francisco	1,490	36.9%	38	35.8%	849	21.0%	19	17.9%	572	14.2%	17	16.0%	851	21.1%	26	24.5%	277	6.9%	6	5.7%
San Mateo	948	26.3%			357	9.9%			198	5.5%			1,904	52.7%			204	5.7%		
Santa Clara	2,767	24.5%	19	31.1%	1,829	16.2%	1	1.6%	339	3.0%	4	6.6%	5,713	50.6%	30	49.2%	650	5.7%	7	11.5%
Ventura	2,413	29.7%			160	2.0%			106	1.3%			5,214	64.2%			225	2.8%		

Four Cluster 2 counties provided information on the ethnicity of clients served. Sacramento, San Diego, San Francisco and Santa Clara counties served Hispanic and Black participants at rates in approximate proportion to the estimated need for service among these groups in each county (see Table 19). Other race/ethnic groups were also served at rates proportional to their estimated need for service in most Cluster 2 counties that provided demographic information. While these patterns suggest that many Cluster 2 counties are serving specific race/ethnic groups in line with their estimated need for service, the small service population sizes in some counties suggest service rates should be considered somewhat tentative, as they may change as these programs grow.

Overall, patterns of service use suggest that Cluster 2 programs' emphasis on serving traditionally underserved groups has resulted in these groups receiving services in relative proportion to their estimated need for service. However, the substantial proportion of Cluster 2 participants without reported gender or race/ethnicity data (e.g., some counties not providing such information; see redacted fields in Tables 18 and 19) suggest service use patterns among demographic groups should be interpreted tentatively.

MHSA PEI Goal	Reduce Incarcerations
Outcome Assessed	Involvement with the justice system (i.e., arrest or incarceration)
Primary Research Question	Has involvement with the justice system been reduced as a result of participation in a Cluster 2 program?

Analysis of Cluster 2 program efforts to reduce incarcerations was conducted among the Sacramento, San Francisco, and Ventura EDAPT, PREP, and PIER programs, respectively. To assess the impact of these programs on participants' involvement with the justice system, rates of participants' reported arrests or incarcerations were analyzed at initial assessment and follow-up. Interpretation of results is discussed in terms of statistical significance. Discussion and implications are then provided in the "Discussion & Implications" section.

Measurement: *Involvement with the justice system*

Table 20. Cluster 2 Counties & Programs that Provided Data for Analysis of *Involvement with the Justice System*

County	Program / Practice	Provided Data
Alameda	PREP	No
Contra Costa	PIER	No
Sacramento	EDAPT	Yes (Arrest items)
San Diego	PIER	No
San Francisco	PREP	Yes (Arrest items)
San Mateo	PREP	No
Santa Clara	PIER	No
Ventura	PIER	Yes (Incarceration items)

Table 21. Instruments & Measures Available for Cluster 2 Analysis of *Involvement with the Justice System*

Instruments	Measures
County Assessment	Items regarding whether respondent was arrested or incarcerated

Results: *Involvement with the justice system*

Table 22. Reported Arrests

	Intake	Follow-up
Yes	15 (18.5%)	3 (3.7%)
No	66 (81.5%)	78 (96.3%)

Respondents in Sacramento and San Francisco counties' EDAPT and PREP programs were asked whether they were arrested prior to intake and between intake and follow-up assessments. In Sacramento, multiple follow-up assessments were available for some respondents, in which case the most recent assessment was analyzed. At intake, 15 respondents (18.5%) reported an arrest prior to intake. However, only three respondents (3.7%) reported an arrest between intake and follow-up. This reduction in the proportion arrested after intake was statistically significant using McNemar's test ($p < .01$). This result provides some indication that Sacramento's EDAPT program and San Francisco's PREP program contributed to a reduction in justice system involvement among participants.

Table 23. Reported Incarcerations

	Intake	Follow-up
Yes	3 (14.3%)	1 (4.8%)
No	18 (85.7%)	20 (95.2%)

Ventura respondents were asked whether they were incarcerated prior to intake and during the six-months between intake and follow-up. At intake, three (14.3%) respondents reported that they were incarcerated prior to intake. At six month follow-up, only one (4.8%) respondent reported being incarcerated during the prior six months. However, this difference in proportion in incarceration rates between the two time points was not statistically significant using McNemar's test.

While the proportion of reported arrests decreased significantly, so few participants reported arrest or incarceration that these single items indicators of arrest or incarceration may be producing a "floor effect", where too few positive responses exist to detect change. As such, the MHSA PEI goals of reducing incarcerations should be assessed in the future among additional programs, using instruments measuring multiple dimensions of justice involvement that may provide a more sensitive assessment of this outcome.

MHSA PEI Goal	Reduce school failure or dropout
Outcome Assessed	Change in school participation
Primary Research Question	Has participation in school changed as a result of participation in a cluster 2 program?

Analysis of Cluster 2 program efforts to reduce school failure or dropout was conducted among the Sacramento and San Diego EDAPT and PIER programs, respectively. To assess the impact of these programs on participants' participation in school, rates of school participation were analyzed at initial assessment and follow-up. There was a wide range of responses across counties that were collapsed into two response types. If a respondent replied that he or she was attending any type of school (i.e. high school, college, vocational, adult education) or were a high school graduate, then they were considered to be in school. If a respondent replied that he or she was only considering school or was a dropout, then they were considered to not be in school. Interpretation of results is discussed in terms of statistical significance. Discussion and implications are then provided in the "Discussion & Implications" section.

Measurement: *Change in school participation*

Table 24. Cluster 2 Counties & Programs that Provided Data for Analysis of *Change in School Participation*

County	Program / Practice	Provided Data
Alameda	PREP	No
Contra Costa	PIER	No
Sacramento	EDAPT	Yes
San Diego	PIER	Yes
San Francisco	PREP	No
San Mateo	PREP	No
Santa Clara	PIER	No
Ventura	PIER	No

Table 25. Instruments & Measures Available for Analysis of *Change in School Participation*

Instruments	Measures
County Assessment	Items regarding current education status

Results: *Change in school participation*

Table 26. Change in Education Status

	Time 1	Time 2
In School	7 (24.1%)	11 (37.9%)
Not in School	22 (75.9%)	18 (62.1%)

Table 26 displays the educational patterns of 29 respondents with educational status being assessed at more than one point. During the intake assessment, seven respondents (24.1%) replied that they were in school. At a subsequent time point, there were 11 respondents (37.9%) that responded that they were in school. However, this increase was not statistically significant using McNemar's test. Thus, the limited information available to assess school participation among Sacramento and San Diego EDAPT and PIER programs participants did not provide insight into the impact of these interventions on consumers' school participation. Moving forward, this important MHSA PEI outcome should be assessed among other programs serving this young population, using multidimensional measures of school participation.

MHSA PEI Goal	Reduce unemployment
Outcome Assessed	Employment Status
Primary Research Question	Has employment status changed as a result of participation in a Cluster 2 program?

Analysis of Cluster 2 program efforts to reduce unemployment was conducted among the Sacramento, San Diego, and Ventura EDAPT, PIER, and PIER programs, respectively. To assess the impact of these programs on participants' employment status, rates of participants' reported employment were analyzed at initial assessment and follow-up. Interpretation of results is discussed in terms of statistical significance. Discussion and implications are then provided in the "Discussion & Implications" section.

Measurement: *Employment Status*

Table 27. Cluster 2 Counties & Programs that Provided Data for Analysis of *Employment Status*

County	Program / Practice	Provided Data
Alameda	PREP	No
Contra Costa	PIER	No
Sacramento	EDAPT	Yes
San Diego	PIER	Yes
San Francisco	PREP	No
San Mateo	PREP	No
Santa Clara	PIER	No
Ventura	PIER	Yes

Table 28. Instruments & Measures Available for Analysis of *Employment Status*

Instruments	Measures
County Assessment	Items regarding current employment status (i.e., employed or unemployed)

Results: *Employment Status*

Table 29. Change in Employment Status

	Time 1	Time 2
Employed	6 (21.4%)	12 (42.9%)
Not employed	22 (78.6%)	16 (57.1%)

Only 28 respondents had employment status assessed at multiple points. For analysis purposes, if respondents were employed either part time or full time, or if they were in a job training program, they were considered to be employed. Otherwise, they were considered unemployed. At the time of intake assessment, six (21.4%) respondents were employed. During a follow-up assessment, twelve (42.9%) respondents reported being employed. This increase in employment rates between the two time points was not statistically significant using McNemar's test, in part due to the small study population. Thus, the limited information available to assess employment status among Cluster 2

participants did not provide insight into the impact of Sacramento, San Diego, and Ventura EDAPT, PIER, and PIER program participation on this outcome. Given the importance of this MHSA PEI goal among younger adults, future research should assess this outcome among other programs serving this population, using multidimensional measures employment.

MHSA PEI Goal	Reduce homelessness
Outcome Assessed	Change in housing status
Primary Research Question	Has housing status changed as a result of participation in a Cluster 2 program?

Analysis of Cluster 2 program efforts to reduce homelessness was conducted among the Sacramento and San Diego EDAPT and PIER programs, respectively. To assess the impact of these programs on participants' housing status, rates of participants' reported living situation were analyzed at initial assessment and follow-up. Respondents indicated a variety of housing situations. For analysis purposes, those that were homeless or in an institutional setting (i.e. correctional facility or temporary housing) were not considered to have permanent housing. Those who reported living independently or with friends or family were considered housed. Interpretation of results is discussed in terms of statistical significance. Discussion and implications are then provided in the "Discussion & Implications" section.

Measurement: *Housing Status*

Table 30. Cluster 2 Counties & Programs that Provided Data for Analysis of Housing Status

County	Program / Practice	Provided Data
Alameda	PREP	No
Contra Costa	PIER	No
Sacramento	EDAPT	Yes
San Diego	PIER	Yes
San Francisco	PREP	No
San Mateo	PREP	No
Santa Clara	PIER	No
Ventura	PIER	No

Table 31. Instruments & Measures Available for Analysis of Housing Status

Instruments	Measures
County Assessment	Items asking current housing status

Results: *Housing Status*

Table 32. Change in Residential Status

	Time 1	Time 2
Housed	70 (95.9%)	71 (97.3%)
Not Housed	3 (4.1%)	2 (2.7%)

There were 73 respondents that had residential status assessed at more than one point. Overall, there were only a few respondents that did not have permanent housing. Only three respondents (4.1%) at intake and two respondents (2.7%) at follow-up assessment were not permanently housed. This difference was not statistically significant using McNemar's test. However, so few participants lacked permanent housing at intake, that Cluster 2 programs could not be expected to make much impact in this regard. Given the importance of this MHSA PEI goal, future research should assess housing status among other programs serving this population, using multidimensional measures of housing situation.

MHSA PEI Goal	Reduce rate of mental health service initiation
Outcome Assessed	Rate of mental health service initiation per 100,000 people
Primary Research Questions	Do rates of mental health service initiation (i.e., 24-hour services, outpatient services, and day services) in counties implementing PEI programs differ from pre to post PEI program initiation? Do rates of mental health service initiation (i.e., 24-hour services, outpatient services, and day services) differ between participating counties and the state overall?

The evaluation team adapted William McFarlane's clinical incidence of psychosis sub-study of PIER programs, to explore changes in the rates of mental health service initiation (per 100,000 people) in counties implementing Cluster 2 programs.[40] Specifically, rates of mental health service initiation were examined pre and post Cluster 2 program administration, and among Cluster 2 participating counties compared to all other California counties, so as to identify possible population level impact of the early intervention programs. Initiation rates were standardized by scaling to a rate per 100,000 individuals so that comparisons between Cluster 2 counties and all other California counties would be possible. Only service records for consumers under 30 years of age, in line with the Cluster 2 service population, were included in this analysis. Analyses were conducted among age groups (i.e., children, transition age youth, and young adults), gender groups, and racial/ethnic groups but no demonstrable differences in patterns between these groups were found. Consequently, the analysis presented here focused on the Cluster 2 service population as a whole. Results are interpreted in terms of the population level impact of Cluster 2 program administration.

Measurement: *Rate of Mental Health Service Initiation*

Table 33. Cluster 2 Counties & Programs that Provided Data for Analysis of *Rate of Mental Health Service Initiation*

County	Program / Practice	Provided Data
Alameda	PREP	Yes

County	Program / Practice	Provided Data
Contra Costa	PIER	Yes
Sacramento	EDAPT	Yes
San Diego	PIER	Yes
San Francisco	PREP	Yes
San Mateo	PREP	Yes
Santa Clara	PIER	Yes
Ventura	PIER	Yes

Table 34. Instruments & Measures Available for Analysis of *Rate of Mental Health Service Initiation*

Instruments	Measures
Client and Service Information (CSI)	Service data for each psychiatric service provided

Results: *Rate of Mental Health Service Initiation*

The Client and Service Information (CSI) database includes client level service records for consumers of the Community Services and Supports (CSS) component of publicly funded mental health services in California. The database lists several types of services under three main modes of service delivery – 24-hour services, outpatient services, and day services. The following table lists the three modes of service delivery and the individual service types categorized under each mode of delivery.

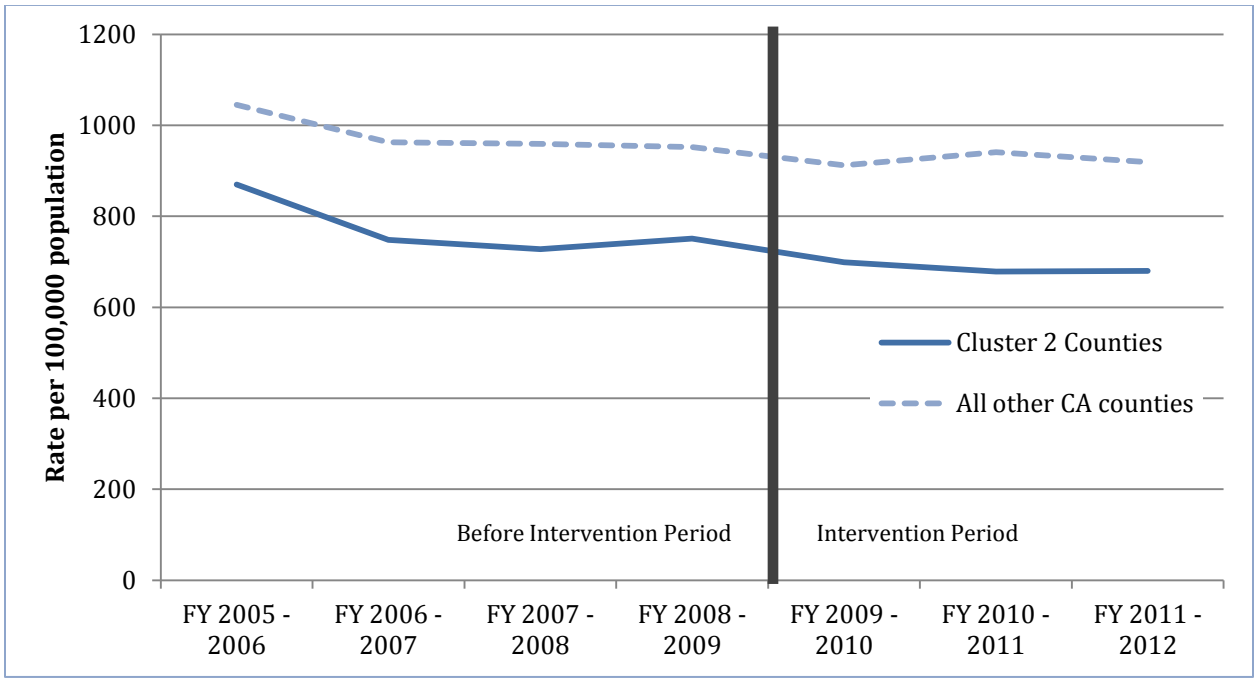
Table 35. Services Types Categorized by Mode of Delivery

24-hour Services	Outpatient Services	Day Services
Hospital Inpatient	Linkage/Brokerage	Crisis Stabilization – Emergency Room
Hospital Administrative Day	Collateral	Crisis Stabilization – Urgent Care
Psychiatric Health Facility (PHF)	Professional Inpatient Visit – Collateral	Vocational Services
SNF Intensive	Mental Health Services (MHS)	Socialization
IMD Basic (no Patch)	Professional Inpatient Visit – MHS	SNF Augmentation
IMD with Patch	Therapeutic Behavioral Services (TBS)	Day Treatment Intensive – Half Day
Adult Crisis Residential	Medication Support (MS)	Day Treatment Intensive – Full Day
Jail Inpatient	Professional Inpatient Visit (MS)	Day Rehabilitation – Half Day
Residential, Other	Crisis Intervention (CI)	Day Rehabilitation – Full Day
Adult Residential	Professional Inpatient Visit (CI)	
Semi-Supervised Living		
Independent Living		
Mental Health Rehab Center		

Initiation rates were calculated for participating PEI counties as well as for the remaining California counties not administering a PEI program included in Cluster 2. Comparisons were also made between the period prior to the initiation of Cluster 2 programs and the post initiation period. Counties varied in the timeframe in which services were implemented, but most participants started receiving services at the beginning of the 2009-2010 fiscal year.

All Service Modes

Figure 1. Rate of Mental Health Service Initiation per 100,000 Californians – All Service Modes

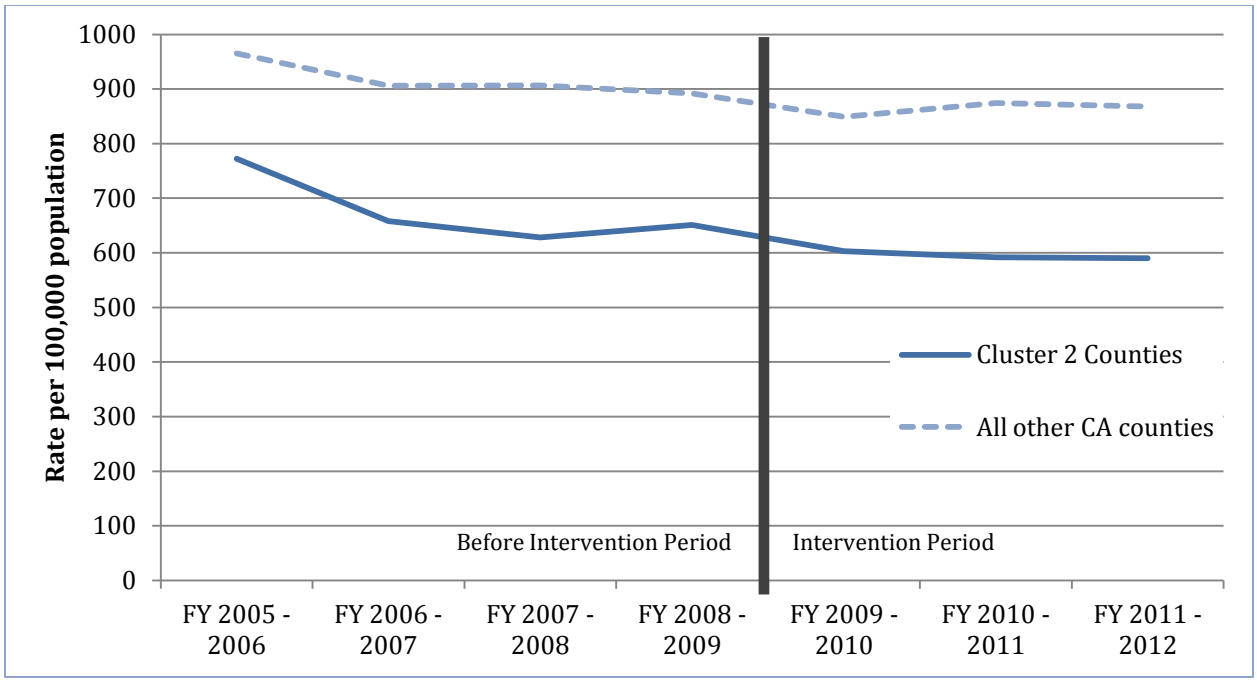


Rates of mental health service initiation per 100,000 Californians were compared between Cluster 2 counties and all other California Counties (see Figure 1). This overall analysis focused on initiation rates for any type of mental health service, regardless of mode of service delivery (see Table 35). During the periods before and after PEI programs began there were significant differences in the average rates of mental health service initiation between Cluster 2 counties and all other counties (Before intervention: $t = 5.26$, $p < .01$, After intervention: $t = 21.94$, $p < .001$). Consistently different rates of mental health service initiation between Cluster 2 counties and all other counties do not suggest an impact of Cluster 2 programs at the population level, across service types. (However, note that separate analyses of outpatient, day, and 24-hour services detailed in the remainder of this section indicate that this overall trend is largely driven by outpatient services; see Figures 2 through 4 below. Specifically, Cluster 2 counties had lower initiation rates for outpatient services compared to all other counties.)

When examining change within county groups over time, Cluster 2 counties were not found to have significantly different average rates of mental health service initiation before compared to after PEI programs began ($t = 2.29$, n.s.). Similarly, all other counties were not found to have significantly different average rates of mental health service initiation before compared to after PEI programs began ($t = 2.08$, n.s.). Thus, comparisons pre to post intervention period do not suggest an impact of PEI program implementation on rates of mental health service initiation, across service types. The following analyses of each major service mode provide a closer look at population level patterns.

Outpatient Services

Figure 2. Rate of Mental Health Service Initiation per 100,000 Californians – Outpatient Services

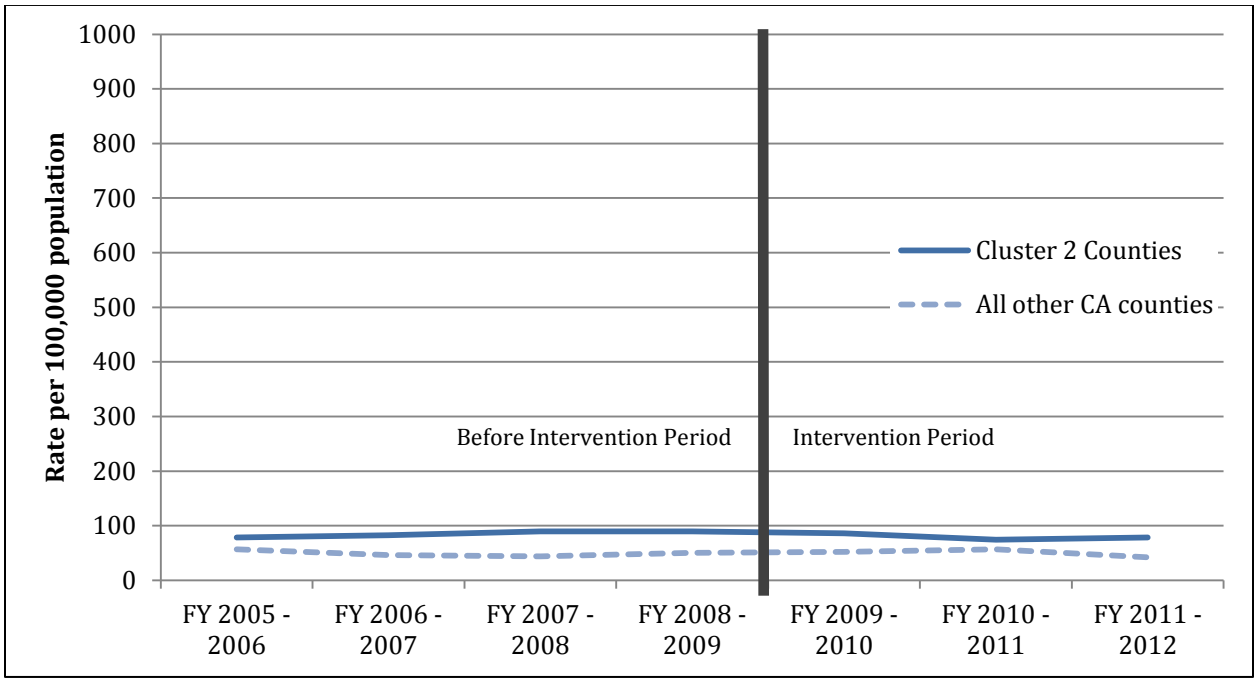


Rates of initiation of outpatient services per 100,000 Californians were lower among Cluster 2 Counties, compared to all other California counties (see Figure 2). During the periods before and after PEI programs began there were significant differences in the average rates of outpatient service initiation between Cluster 2 counties and all other counties (Before intervention: $t = 6.64$, $p < .01$, After intervention: $t = 31.35$, $p < .001$). Consistently different rates of outpatient service initiation between Cluster 2 counties and all other counties do not suggest an impact of Cluster 2 programs among outpatient services.

When examining change within county groups over time, Cluster 2 counties were not found to have significantly different average rates of outpatient service initiation before compared to after PEI programs began ($t = 2.15$, n.s.). However, all other counties were found to have a significantly lower average rate of outpatient service initiation after PEI programs began compared to before ($t = 2.64$, $p < .05$). Thus, comparisons pre to post intervention period do not suggest an impact of PEI program implementation on rates of outpatient mental health service initiation.

Day Services

Figure 3. Rate of Mental Health Service Initiation per 100,000 Californians – Day Services



During the periods before and after PEI programs began there were significant differences in the average rates of day mental health service initiation between Cluster 2 counties and all other counties (Before intervention: $t = 8.97$, $p < .001$, After intervention: $t = 5.35$, $p < .01$). Consistently different rates of mental health service initiation between Cluster 2 counties and all others do not suggest an impact of Cluster 2 programs at the population level, among day services (Figure 3).

When examining change within county groups over time, Cluster 2 counties were not found to have significantly different average rates of day service initiation before compared to after PEI programs began ($t = 1.20$, n.s.). Similarly, all other counties were not found to have significantly different average rates of day service initiation before compared to after PEI programs began ($t = 0.26$, n.s.). Thus, comparisons pre to post intervention period do not suggest an impact of PEI program implementation on rates of mental health service initiation, among day services.

24-Hour Services

Figure 4. Rate of Mental Health Service Initiation per 100,000 Californians – 24-hour Services

During the periods before and after PEI programs began there were not significant differences in the average rates of 24-hour service initiation between Cluster 2 counties and all other counties (Before intervention: $t = 0.31$, n.s., After intervention: $t = 1.37$, n.s.). Undifferentiated rates of mental health service initiation between Cluster 2 counties and all others do not suggest an impact of Cluster 2 programs at the population level, among 24-hour services (Figure 4).

When examining change within county groups over time, Cluster 2 counties were not found to have significantly different average rates of 24-hour service initiation before compared to after PEI programs began ($t = 0.31$, n.s.). Similarly, all other counties were not found to have significantly different average rates of 24-hour service initiation before compared to after PEI programs began ($t = 0.88$, n.s.). Thus, comparisons pre to post intervention period also do not suggest an impact of PEI program implementation on rates of 24-hour mental health service initiation.

As a whole, comparisons of rates of mental health service initiation overall, outpatient service initiation, and day service initiation revealed consistent differences between Cluster 2 counties and the rest of the state. Differences in rates of 24-hour service initiation were not found between Cluster 2 counties and all other counties. Undifferentiated rates of mental health service initiation between Cluster 2 counties and all others before and after Cluster 2 programs began do not suggest an impact of Cluster 2 programs at the population level, among any service mode. When examining change within county groups over time, differences were not found among Cluster 2 counties between pre and post intervention periods, for any service mode or overall. Thus, evidence did not provide population level indications of Cluster 2 program impact. However, analyses of day service initiation suggested Cluster 2 programs contributed to reductions of day service initiation rates during the period immediately after Cluster 2 program implementation, as these same rates increased among all other California counties. Thus, Cluster 2 programs may have had an impact on day services at the population level, but more detailed analyses will be required to understand the nature of this impact.

Evaluation Advisory Group Feedback

Evaluation Advisory Group questions or feedback received regarding the findings included in this report focused on a few central themes, including 1) the need for programs to more systematically and completely track program service and participant outcome information (e.g., service engagement and quality, longitudinal data, and complete demographic information), 2) investigation of other services (e.g., culturally competent services) and outcomes (e.g., social connection) for which data is not yet available, 3) emphasis on understanding changes (e.g., severity of mental illness) from a clinical perspective, and 4) impact among Asian and American Indian consumers. Evaluation Advisory Group comments were carefully considered by the evaluation team, and influenced how results are presented and interpreted in this report.

Limitations

Several factors limited the ability to examine and draw conclusions regarding MHSA PEI goals. Specifically, in some cases analyses of program impact on severity of mental illness were conducted on relatively small service populations, which did not allow for analysis by demographic subgroup (e.g., in the case of the CFARS data) and did not allow strong conclusions to be drawn regarding program impact. Thus, results only provide indications of program progress given available information.

No data was available from Cluster 2 programs that directly indicated timely access to services among underserved groups (e.g., number and demographics of citizens attempting to access services in relation to mental health status), thus rates of service use relative to estimated need for service was analyzed as a proxy. Results of the analysis of service use do not directly support conclusions regarding rates of "service access". Additionally, some Cluster 2 programs served relatively few consumers, and some consumers did not have valid race/ethnicity data, so the service rates of specific demographic groups among some counties can only be tentatively compared to estimates of need for service.

Examination of Cluster 2 program impact on justice involvement, school participation, employment, and housing status were only possible through analysis of data generated through single item indicators. While significant improvement was found in the proportion of participants reporting arrest, analysis of all of these outcomes should be interpreted tentatively as single item indicators often produce inconsistent results. Thus, justice involvement, school participation, employment, and housing status among PEI participants should be further investigated with multidimensional measures, so that a more complete understanding of program impact on these outcomes can be reached.

A diversity of MHSA supported PEI programs are implemented across the state, but programs included in Cluster 2 met stringent inclusion criteria noted above (i.e., provide early intervention services, at least partially funded through MSHA PEI, participants identified via clinical assessment, and provide promising or evidence-based treatment components found to be effective for the consumer populations under study). As such, the scope of this study was limited to PREP, PIER, and EDAPT programs. Thus, conclusions regarding the impact of Cluster 2 programs cannot be generalized to the broader population of MHSA supported PEI programs.

Additionally, many Cluster 2 programs did not previously collect sufficient data or were not able to collect data during the course of this project, regarding several MHSA PEI stated goals, relevant to this service population. Cluster 2 programs are working towards most MHSA PEI goals, and are beginning to track many relevant outcomes in various ways. To some extent the lack of sufficient data in these areas is due to the fact that many programs were initiated relatively recently (e.g., in operation for less than two years). However, in all cases program and county staff indicated interest

in collecting additional information relevant to all stated MHSA PEI outcomes, noting the need for sufficient resources (e.g., monetary, time, training and technical assistance) before such tracking can be routinely and reliably conducted.

Discussion & Implications

The analyses presented in this report regarding MHSA PEI goals indicate encouraging patterns among program participant outcomes and Cluster 2 programs themselves. Implications for policy, practice, and future research are discussed regarding each MHSA PEI goal analyzed, below.

Change in the severity of mental illness

Overall, analysis across most Cluster 2 programs revealed a largely consistent pattern of improvement in the severity of mental illness, in many cases clinically significant reductions from more to less severe levels of symptoms or higher levels of functioning. These overall findings are in line with previous investigations of PREP[41], PIER[42], and EDAPT[43] programs.

Participants in PREP programs, assessed via the PHQ-9, on average reported reductions in depression severity, from near the moderate depression range to the mild depression range (see Table 11 for scale guidelines), but changes were not clinically significant. When looking at race/ethnic groups specifically, Black and female participants reported clinically significant reductions in symptoms between assessment periods. Asian and Hispanic participants also reported average reductions in symptoms, but these changes were not clinically significant. These findings suggest that the PREP programs in San Francisco and San Mateo counties positively impacted consumers overall as well as specific gender and race/ethnic groups. However, the small service populations assessed via the PHQ-9 suggests patterns should be interpreted tentatively, as patterns may change as these programs grow, or additional participants are assessed with this instrument.

Participants in PREP, PIER, and EDAPT programs, assessed via the GAF, on average reported improvement in functioning, but remained in the same functional range (i.e., Serious symptoms, or any serious impairment in social, occupational, or school functioning), which did not indicate clinically significant change in severity of mental illness. Analyses of functioning by gender were obscured by the large number of participants without a reported gender. Hispanic participants reported the largest average gains in functioning when compared with those of other races/ethnicities, but no race/ethnic group reported clinically significant improvement on average. While average GAF scores did display clinically significant improvement overall, average increases in functioning among a relatively large study population provide support for the consistent positive impact of the PREP, PIER, and EDAPT programs included in this Cluster 2 analysis.

The relatively few PIER program participants assessed via relevant CFARS subscales (i.e., depression and anxiety) did not report average change in severity of mental illness. However, the small study population was not likely to support detection of the relatively modest effects found among Cluster 2 programs.

Unfortunately, due to the scope of this study, the magnitude of impact on severity of mental illness could not be compared among other promising PEI programs or practices being implemented across the state. Future research should be conducted to examine the relative effectiveness of various PEI approaches, including consideration of relative resource requirements and efficiencies, across the state.

Rates of Service Utilization Among Underserved Populations

Most Cluster 2 programs served race/ethnic minority groups (i.e., Hispanics and Black individuals) in relative proportion to the estimated rate of need for service among their respective county populations. This pattern suggests that the overall MHSA value, and stated PEI goal, of serving traditionally underserved racial/ethnic minority groups has had an impact on culture and service at the program level, resulting in minority groups receiving services in relative proportion to their estimated need. Also, as noted earlier, the estimates of need for service utilized in this analysis do not perfectly represent the rates of service use among the relatively small and age specific service populations of Cluster 2 programs. As a result, these estimates of need are probably conservative because they likely overestimate the need for service among various populations. This further supports the likelihood that Cluster 2 programs are at least as effective as indicated by the current findings.

Further, these findings suggest that additional data collection regarding MHSA PEI program service outreach to underserved populations (e.g., outreach processes, strategies, and goals), and rates of conversion to program participation (e.g., clinical assessment processes), should be supported so that further investigation of the most effective outreach and service strategies can be identified and disseminated.

Involvement with the Justice System

Respondents in Sacramento and San Francisco counties were asked whether they were arrested prior to intake and between intake and follow-up assessments. The proportional reduction in reports of arrest was statistically significant, suggesting a positive impact of Sacramento and San Francisco EDAPT and PREP programs, respectively. However, few participants reported arrest or incarceration, and both measures were collected via single survey items that are notoriously inconsistent. Additionally, so few consumers reported arrest or incarceration that the measure used might have produced a "floor effect" such that the measures were not sensitive enough to detect change. As such, the MHSA PEI goal of reducing incarcerations should be assessed in the future among additional programs, using instruments measuring multiple dimensions of justice involvement that may provide a more powerful and reliable assessment of this outcome.

School Participation

Analysis of Cluster 2 program efforts to reduce school failure or dropout was conducted among the Sacramento and San Diego EDAPT and PIER programs, respectively. There was a proportional increase in participants who reported being in school, but this change was not statistically significant, likely due to the small study population. Thus, the information available to assess school participation among Sacramento and San Diego EDAPT and PIER program participants was limited in terms of its ability to provide insight into the impact of these interventions on consumers' school participation. Moving forward, this important MHSA PEI outcome should be assessed among other programs serving this young population, using multidimensional measures of school participation and larger sample sizes.

Employment Status

There was slight improvement in the rate of employment among Cluster 2 participants reporting relevant data, but this change was not statistically significant, likely due to the small study population. The limited information available overall to assess employment status among Cluster 2 participants could not support conclusions regarding the impact of program participation on this outcome. Additional and multidimensional data collection should be pursued to support adequate assessment of this outcome.

Housing Status

Analysis of Cluster 2 program efforts to reduce homelessness was conducted among the Sacramento and San Diego EDAPT and PIER programs, respectively. But similar to school participation and employment outcomes, few Cluster 2 participants reported valid longitudinal data regarding housing status. Among the small group with available data, few participants lacked permanent housing at intake. Thus, Cluster 2 programs could not be expected to make much impact on this largely housed group of participants. Additional data collection among other programs, including multidimensional data collection would support adequate assessment of this outcome.

Rate of Mental Health Service Initiation

Comparisons of rates of mental health service initiation overall, outpatient service initiation, and day service initiation revealed consistent differences between Cluster 2 counties and the rest of the state, suggesting Cluster 2 counties are not representative of the state overall. Differences were not found among Cluster 2 counties between pre and post intervention periods, for any service mode or overall. Thus, evidence did not provide population level indications of Cluster 2 program impact. However, analyses of day service initiation suggested Cluster 2 programs contributed to reductions of day service initiation rates during the period immediately after program implementation, as these same rates increased among all other California counties. Thus, Cluster 2 programs may have had an impact on day services at the population level, but more detailed analyses will be required to understand the nature of this impact. These patterns suggest Cluster 2 programs may be impacting the rates at which their respective county populations initiate day services (i.e., Crisis Stabilization – Emergency Room, Crisis Stabilization – Urgent Care, Vocational Services, Socialization, SNF Augmentation, Day Treatment Intensive – Half Day, Day Treatment Intensive – Full Day, Day Rehabilitation – Half Day, Day Rehabilitation – Full Day). Thus, it may be the case that Cluster 2 programs are providing participants with alternatives to emergency or crisis services, in line with McFarlane's previous findings regarding the PIER program.[44, 45] While these patterns provide an indication of the impact of early intervention services at the population level, more detailed individual level analysis of the impact of these interventions on day services will be required to fully understand the nature of this impact.

Appendix A: Early Intervention Evaluation Advisory Group Members

From among a stakeholder group consulted during the development of this evaluation, the evaluation team recruited a group of advisors who agreed to consult routinely throughout the project as needed (see Table A-2). The evaluation advisory group is comprised of three practice/research stakeholders, two county/provider agency stakeholders, and three stakeholders with lived experience of mental illness and treatment in the public sector, as well as family members. In order to use their time most efficiently we engaged advisory group members, as appropriate given their experience and expertise, during each phase of the project, including the results review phase.

Table A-1. Early Intervention Advisory Group Members

Name	Organization	Stakeholder Type
Cricket Mitchell	California Institute for Mental Health (CiMH)	Practice/Research
Liz Miles	QI Performance Improvement Team, County of San Diego Behavioral Health Services	County/Provider
Juan Ibarra	Office of Quality Management for Community Programs, San Francisco Department of Public Health	County/Provider
Kamila Baker	California Youth Empowerment Network (CAYEN)	Person with Lived Experience
Luz Parra	Parent Partner Program Manager	Family Member
Raja Mitry	California Elder Mental Health and Aging Coalition and Racial and Ethnic Mental Health Disparities Coalition (REMHDCO)	Person with Lived Experience
Stephanie Welch	California Mental Health Services Authority (CalMHSA)	Practice/Research
Steve Wilson	School of Social Work, California State University Long Beach	Practice/Research

Endnotes

[1] See Welfare Institutions Code (WIC) section 5840-5840.2

[2] www.prepwellness.org

[3] www.prepwellness.org

[4] http://www.ncbi.nlm.nih.gov/pmc/articles/PMC161730/

[5] http://www.changemymind.org/wp-content/uploads/EDIPPP_IssueBrief-4_5_11.pdf

[6] McGorry PD, Killackey E, Yung A (2008) Early intervention in psychosis: concepts, evidence and future directions. World Psychiatry 7: 148–156.

[7] http://www.ncbi.nlm.nih.gov/pmc/articles/PMC161730/

[8] BMJ 2013; 346 doi: http://dx.doi.org/10.1136/bmj.f185

[9] McFarlane, W.R., et al. (2010). *Portland Identification and Early Referral: A Community-Based System for Identifying and Treating Youths at High Risk of Psychosis. Psychiatric Services 2010; doi: 10.1176/appi.ps.61.5.512*

[10] Cook JA, Leff HS, Blyler CR, et al. Results of a multisite randomized trial of supported employment interventions for individuals with severe mental illness. Arch Gen Psychiatry. 2005; 62(5): 505-12.

[11] http://www.piertraining.com/pier-model/assessment/

[12] The UC Davis Department of Psychiatry operates the EDAPT Clinic and the SacEDAPT Clinic. EDAPT as implemented through the EDAPT Clinic is the same as the PIER model and has been included in a national multi-site evaluation of PIER since 2008.

[13] The SacEDAPT Clinic is the specific collaboration between UC Davis and Sacramento County Mental Health and uses MHSA PEI funds to serve Sacramento County residents age 12-25 who are Medi-Cal eligible or uninsured. Thus, the target population and specific program elements of the SacEDAPT clinic are described here because they are most fitting for our current study. The population served by the EDAPT Clinic includes individuals age 12-40 from Sacramento and the surrounding areas who are insured or who can pay out of pocket.

[14] Caplan, B., et al. *Prevention and Recovery in Early Psychosis (PREP®): Building a public-academic partnership program in Massachusetts*, United States, Asian Journal of Psychiatry, Volume 6, Issue 2, April 2013, Pages 171-177, ISSN 1876-2018, http://dx.doi.org/10.1016/j.ajp.2012.10.009.

[15] A.R. Yung, P.D. McGorry, S.M. Francey, B. Nelson, K. Baker, L.J. Phillips, G. Berger, G.P. Amminger. *PACE: a specialised service for young people at risk of psychotic disorders.* Medical Journal of Australia, 187 (7 Suppl.) (2007), pp. S43−S46

[16] http://prepwellness.org/history-of-development/

[17] Cognitive Behavioral Therapy (CBT) for early psychosis is the only individual psychotherapy that has been shown to improve outcomes in early psychosis.

[18] The PREP program will move to collecting measures at six-month intervals in 2013.

[19] See Welfare Institutions Code (WIC) section 5840-5840.2

[20] See Welfare Institutions Code (WIC) section 5840-5840.2

[21] This MHSA PEI goal has conceptual relation but is distinct from to the goal of preventing prolonged suffering. Programs do not measure these goals distinctly, and do not reliably collect data regarding the time element inherent in measuring the prevention of prolonged suffering. Thus, prevention of prolonged suffering will not be assessed within this study.

[22] http://172.10.175.217/estimation/3_Synthetic/synthetic.htm

[23] http://www.icpsr.umich.edu/icpsrweb/CPES/

[24] Enders, C.K. (2010). Applied missing data analysis. New York: Guilford Press.

[25] Cohen, J. (1969) *Statistical Power Analysis for the Behavioral Sciences*. NY: Academic Press. Cohen, J. (1994) The Earth is Round (p<.05). *American Psychologist*, 49, 997-1003.

[26] Approach adapted from Dr. William McFarlane's Clinical Incidence of Psychosis Sub-Study, presented at the National Council Mental Health and Addictions Conference, April 2012. The evaluation team regularly consulted with Dr. McFarlane through the evaluation planning process, to adapt this approach for the purposes of the Cluster 2 evaluation.

[27] Martin, A., Rief, W., Klaiberg, A., and Braehler, E. (2006). Validity of the brief patient health questionnaire mood scale (PHQ-9) in the general population. *General Hospital Psychiatry,* 29:71-77.

[28] Lowe, B., Kroenke, K., Herzog, W., and Grafe, K. (2004). Measuring depression outcome with a brief self-report instrument: sensitivity to change of the PHQ-9. *Journal of Affective Disorders*, 81:61-66.

[29] Derived from Martin, A., Rief, W., Klaiberg, A., and Braehler, E. (2006). Validity of the Brief Patient Health Questionnaire Mood Scale (PHQ-9) in the general population. *General Hospital Psychiatry, 29* (71-77).

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[33] Holzer, C.E., and Nguyen, H.T. (2009) Estimation of Need for Mental Health Services. Retrieved from http://172.10.175.217/estimation/3_Synthetic/synthetic.htm

[34] J.A. Ciarlo, D.L. Tweed, D.L. Shern, L.A. Kirkpatrick, N. Sachs-Ericsson, I. (1992). Validation of indirect methods to estimate need for mental health services: Concepts, strategy, and general conclusions. *Evaluation and Program Planning*, 15(2), 115-131, http://dx.doi.org/10.1016/0149-7189(92)90003-D.

[35] National Institute of Mental Health Collaborative Psychiatric Epidemiology Surveys (CPES) http://www.icpsr.umich.edu/icpsrweb/CPES/

[36] Rosen, B.M., Goldsmith, H.F., & Redick, R.W. (1979, May). Demographic and social indicators: Uses in mental health planning in small areas. World Health Statistics Quarterly Report: Mental Health Planning (Vol. 32, No. 1). Geneva: World Health Organization.

[37] http://www.icpsr.umich.edu/icpsrweb/CPES/

[38] http://172.10.175.217/estimation/3_Synthetic/synthetic.htm

[39] Mackenzie, C. S., Gekoski, W. L., and Knox, V. J. (2006). Age, gender, and the underutilization of mental health services: The influence of help-seeking attitudes. Aging & Mental Health, Vol. 10, Iss. 6.

[40] Approach adapted from Dr. William McFarlane's Clinical Incidence of Psychosis Sub-Study, presented at the National Council Mental Health and Addictions Conference, April 2012. The evaluation team has regularly consulted with Dr. McFarlane through the evaluation planning process, to adapt this approach for the purposes of the Cluster 2 evaluation.

[41] Caplan, B., et al. *Prevention and Recovery in Early Psychosis (PREP®): Building a public-academic partnership program in Massachusetts*, United States, Asian Journal of Psychiatry, Volume 6, Issue 2, April 2013, Pages 171-177, ISSN 1876-2018, http://dx.doi.org/10.1016/j.ajp.2012.10.009.

[42] McFarlane, W.R., et al. (2010). *Portland Identification and Early Referral: A Community-Based System for Identifying and Treating Youths at High Risk of Psychosis. Psychiatric Services 2010; doi: 10.1176/appi.ps.61.5.512*

[43] The UC Davis Department of Psychiatry operates the EDAPT Clinic and the SacEDAPT Clinic. EDAPT as implemented through the EDAPT Clinic is the same as the PIER model and has been included in a national multi-site evaluation of PIER since 2008.

[44] McFarlane, W.R., et al. (2010). *Portland Identification and Early Referral: A Community-Based System for Identifying and Treating Youths at High Risk of Psychosis. Psychiatric Services 2010; doi: 10.1176/appi.ps.61.5.512*

[45] Approach adapted from Dr. William McFarlane's Clinical Incidence of Psychosis Sub-Study, presented at the National Council Mental Health and Addictions Conference, April 2012. The evaluation team regularly consulted with Dr. McFarlane through the evaluation planning process, to adapt this approach for the purposes of the Cluster 2 evaluation.