



ASPE
ASSISTANT SECRETARY FOR
PLANNING AND EVALUATION

**OFFICE OF BEHAVIORAL HEALTH,
DISABILITY, AND AGING POLICY**

Implementation and Impacts of the Certified Community Behavioral Health Clinic Demonstration: Findings from the National Evaluation

Prepared for
the Office of the Assistant Secretary for Planning and Evaluation (ASPE)
at the U.S. Department of Health & Human Services

by
Mathematica

November 2022

Office of the Assistant Secretary for Planning and Evaluation

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This research was funded by the U.S. Department of Health and Human Services Office of the Assistant Secretary for Planning and Evaluation under Contract Number #HHSP233201600017 and carried out by Mathematica. Please visit the [Office of Behavioral Health, Disability, and Aging Policy \(BHDAP\)](#) page or ASPE [Behavioral Health page](#) for additional research in this area.

IMPLEMENTATION AND IMPACTS OF THE CERTIFIED COMMUNITY BEHAVIORAL HEALTH CLINIC DEMONSTRATION: FINDINGS FROM THE NATIONAL EVALUATION

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November 1, 2022

Prepared for

Office of Behavioral Health, Disability, and Aging Policy
Office of the Assistant Secretary for Planning and Evaluation
U.S. Department of Health and Human Services
Contract #HHSP233201600017

The opinions and views expressed in this report are those of the authors. They do not reflect the views of the Department of Health and Human Services, the contractor or any other funding organization. This report was completed and submitted on September 27, 2021.

ACKNOWLEDGEMENTS

We appreciate the support and guidance of Judith Dey and Laura Jacobus-Kantor of the Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services, Beverly Boston and Danielle Motley of the Centers for Medicare & Medicaid Services, and Trina Dutta, Anita Everett, David de Voursney, Cynthia Kemp, Mary Blake, and David Morrissette (retired) of the Substance Abuse and Mental Health Services Administration. In addition to the authors, the evaluation team included Xiao Barry, Crystal Blyler, Sarah Brunskill, Richard Chapman, Sarah Croake, Laurie Felland, Rachel Hildrich, Vidhi Joshi, Mark Lee, Jasmine Little, and Sybil Pan. Sheryl Friedlander provided production support. Harold A. Pincus served as a consultant to the evaluation. We appreciate the participation of CCBHC staff, state officials, and consumer and family representatives in the evaluation.

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ACRONYMS

The following acronyms are mentioned in this report and/or appendices.

ADHD	Attention Deficit Hyperactivity Disorder
AMA-PCPI	American Medical Association-Physician Consortium for Performance Improvement
AMM	Antidepressant Medication Management
AOD	Alcohol or Other Drug
ASC	Unhealthy Alcohol Use--Screening and Brief Counseling
ASPE	HHS Office of the Assistant Secretary for Planning and Evaluation
BH	Behavioral Health
BMI	Body Mass Index
CBT	Cognitive Behavioral Therapy
CCBHC	Certified Community Behavioral Health Clinic
CCBHC-E	CCBHC Expansion grant
CCW	Chronic Condition Warehouse
CDC	HHS Centers for Disease Control and Prevention
CDF	Screening for Clinical Depression and Follow-up Plan
CDPS	Chronic Illness and Disability Payment System
CHIP	Children's Health Insurance Program
CMHC	Community Mental Health Center
CMS	HHS Centers for Medicare & Medicaid Services
COPD	Chronic Obstructive Pulmonary Disease
CPR	Community Psychiatric Rehabilitation
CSTAR	Comprehensive Substance Treatment and Rehabilitation
DBT	Dialectical Behavior Therapy
DCO	Designated Collaborating Organization
DEP-REM-12	Depression Remission at Twelve Months
DY	Demonstration Year
EBP	Evidence-Based Practice
ED	Emergency Department
EHR	Electronic Health Record
FFS	Fee-For-Service
FFY	Federal Fiscal Year
FQHC	Federally Qualified Health Center
FUA	Follow-Up After Emergency Department for Alcohol or Other Drug Dependence
FUH-BH-A	Follow-Up After Hospitalization for Mental Illness, ages 21+ (adult)
FUH-BH-C	Follow-Up After Hospitalization for Mental Illness, ages 6-21 (child/adolescent)
FUM	Follow-up After Emergency Department Visit for Mental Illness
HbA1c	Glycated Hemoglobin Test
HCPCS	Healthcare Common Procedure Coding System
HEDIS	Healthcare Effectiveness Data and Information Set

HHS	U.S. Department of Health and Human Services
HIT	Health Information Technology
HOU	Housing Status
I-EVAL	Time to Initial Evaluation
ICD	International Classification of Diseases
IET-BH	Initiation and Engagement of Alcohol and Other Drug Dependence Treatment
IMD	Institution for Mental Disease
IP	Inpatient
IPSD	Index Prescription Start Date
KFF	Kaiser Family Foundation
LCSW	Licensed Clinical Social Worker
LGBTQ	Lesbian, Gay, Bisexual, Transgender, and Queer (or Questioning)
MAT	Medication-Assisted Treatment
MCO	Managed Care Organization
MEI	Medicare Economic Index
MHSIP	Mental Health Statistics Improvement Program
MIPS	Merit-based Incentive Payment System
MNCM	Minnesota Community Measurement
N-MHSS	National Mental Health Services Survey
NASMHPD	National Association of State Mental Health Program Directors
NCQA	National Committee for Quality Assurance
NQF	National Quality Forum
OB/GYN	Obstetrics and Gynecology
P.L.	Public Law
PAMA	Protecting Access to Medicare Act
PBPM	Per Beneficiary Per Month
PCP	Primary Care Physician
PCR-AD	Plan All-Cause Readmission Rate
PCR-BH	Plan All-Cause Readmission Rate, adults
PEC	Patient Experience of Care
PH	Physical Health
PHQ-9	Patient Health Questionnaire-9
PPS	Prospective Payment System
PTSD	Post-Traumatic Stress Disorder
QBP	Quality Bonus Payment
SAA-BH	Adherence to Antipsychotic Medications for Individuals with Schizophrenia
SAMHSA	HHS Substance Abuse and Mental Health Services Administration
SED	Serious Emotional Disturbance
SMI	Serious Mental Illness
SRA	Suicide Risk Assessment
SRA-BH-A	Adult Major Depressive Disorder: Suicide Risk Assessment
SRA-BH-C	Child and Adolescent Major Depressive Disorder: Suicide Risk Assessment

SSD	Diabetes Screening for Schizophrenia or Bipolar Patients Using Antipsychotic Medications
SUD	Substance Use Disorder
T-MSIS	Transformed Medicaid Statistical Information System
TCM	Targeted Case Management
TSC	Tobacco Use--Screening and Cessation Intervention
URS	Uniform Reporting System
VHA	Veterans Health Administration
WCC-BH	Weight Assessment for Nutrition and Physical Activity for Children/Adolescents
WHO	World Health Organization
WM	Withdrawal Management
Y/FEC	Youth/Family Experience of Care Survey

EXECUTIVE SUMMARY

In the United States, only 45 percent of adults with any mental health condition and 10 percent of adults with any substance use disorder (SUD) received treatment in 2019 (SAMHSA 2020a). Opioids and other substances continue to devastate communities and recent data indicate an increase in drug overdose deaths (CDC 2021). Individuals with behavioral health conditions also continue to experience premature mortality due to suicide and untreated comorbid physical health (PH) conditions including diabetes and cardiovascular diseases (Roberts et al. 2017).

Effective evidence-based treatments for mental health conditions and SUDs are unavailable or difficult to access in many communities (Blyler et al. 2021). Pervasive behavioral health workforce shortages create long wait-times for appointments, and in some areas, emergency departments (EDs) and the criminal justice system are the only sources of care for people in crisis (Cama et al. 2017; Nordstrom et al. 2019; Bradley et al. 2020; SAMHSA 2021). Even when services are available, behavioral health providers often do not have the resources, staff, or data systems to monitor chronic conditions and coordinate care with external health and social service providers (Kilbourne et al. 2018; Pincus et al. 2016).

Community mental health centers (CMHCs) play an essential role in delivering ambulatory behavioral health care. Historically, the Federal Government has maintained a narrow definition of CMHCs (pertaining only to providers who participate in Medicare; CMS n.d.), but states and localities use the term more broadly to refer to ambulatory care facilities that specialize in the delivery of behavioral health care. Following the repeal of the Mental Health Systems Act and introduction of block grants in the 1980s, states were largely responsible for determining what services to provide through CMHCs and how to integrate them into systems of care (NASMHPD Research Institute 2007). Today, there are approximately 2,682 state-licensed or certified CMHCs across the nation and an additional 5,220 outpatient specialty mental health clinics (SAMHSA 2020b). CMHCs generally serve individuals with serious mental illness (SMI) and sometimes people with less severe or chronic disorders; not all serve children or adolescents or provide family-based services. Most CMHCs serve Medicaid beneficiaries or individuals enrolled in other public insurance and they often function as safety net providers for the uninsured. However, they tend to be under-resourced and vary in the services they offer. For example, depending on the state, between half to three-quarters of CMHCs provide SUD treatment (Wishon et al. 2021). Only 23 percent of CMHCs provide integrated primary care services but this ranges from no CMHCs in some states to over 50 percent of CMHCs in other states (Brown 2019).

Over the past several decades, Medicaid has become an increasingly important source of funding for CMHCs and behavioral health care more generally as funding has shifted toward community-based services and away from more restrictive institutional settings (Medicaid and CHIP Payment and Access Commission 2015). Federal block grants continue to provide states and CMHCs with funding for treatment, but this funding now accounts for a smaller proportion of care than in the past (Schiff et al. 2015). States and providers report that CMHCs encounter considerable financial hardship, which has constrained their ability to expand access to care and reach underserved populations. Economic pressures have forced many states to make significant reductions to their mental health care budgets and even eliminate services (Aron-Dine et al. 2020; Schiff et al. 2015). In states that did not expand Medicaid eligibility, many individuals with mental health and SUDs remain uninsured, and CMHCs struggle to cover the costs of uncompensated care (Dey et al. 2016). Even for clients with Medicaid or other types of insurance, reimbursement rates often do not fully cover comprehensive care and high-quality case management (Scharf et al. 2015). CMHCs turn to a patchwork of federal and state funds and philanthropy

to supplement the cost of care for Medicaid beneficiaries and the uninsured. Finally, CMHCs face growing pressure to provide an increasingly broad array of mental health, substance use, and primary care services for individuals with comorbid conditions.

A. Goals of the Certified Community Behavioral Health Clinic Demonstration

Section 223 of the Protecting Access to Medicare Act (PAMA), enacted in April 2014 (P.L. 113-93), authorized the Certified Community Behavioral Health Clinic (CCBHC) demonstration to allow states to test a new strategy for delivering and reimbursing services provided in CMHCs and other community behavioral health clinics. The demonstration, initially authorized for two years, aims to improve the availability, quality, and outcomes of ambulatory services provided in community behavioral health clinics by establishing a standard definition for CCBHCs and developing a new Medicaid prospective payment system (PPS) in each state that accounts for the expected cost of providing comprehensive services to all individuals who seek care, regardless of their ability to pay, including but not limited to those with SMI, serious emotional disturbance, and SUDs. The demonstration also aims to provide coordinated care that addresses both behavioral and physical health conditions.

CCBHCs must offer nine types of services including: (1) crisis mental health services; (2) screening, assessment, and diagnosis; (3) patient-centered treatment planning; (4) outpatient mental health and substance use services; (5) outpatient clinic primary care screening and monitoring; (6) targeted case management (TCM); (7) psychiatric rehabilitation services; (8) peer support, counselor services, and family supports; and (9) intensive, community-based mental health care for members of the armed forces and veterans (SAMHSA 2016a). However, states have some flexibility to tailor these services to align with their state Medicaid Plans and other state regulations, and to meet the needs of communities. Services must be person and family-centered, trauma-informed, and recovery-oriented. In addition, CCBHCs are required to expand service hours, provide services beyond the walls of the clinic (for example, in clients' homes and elsewhere in the community), and maintain partnerships with a range of health and social service providers to facilitate referrals and care coordination (SAMHSA 2016a). CCBHCs can partner with Designated Collaborating Organizations (DCOs) to provide some of the required services. DCOs are entities that are not directly supervised by a CCBHC but have a formal relationship with a CCBHC to provide specified services. CCBHCs that engage DCOs maintain clinical responsibility for services the DCO provides to CCBHC clients.

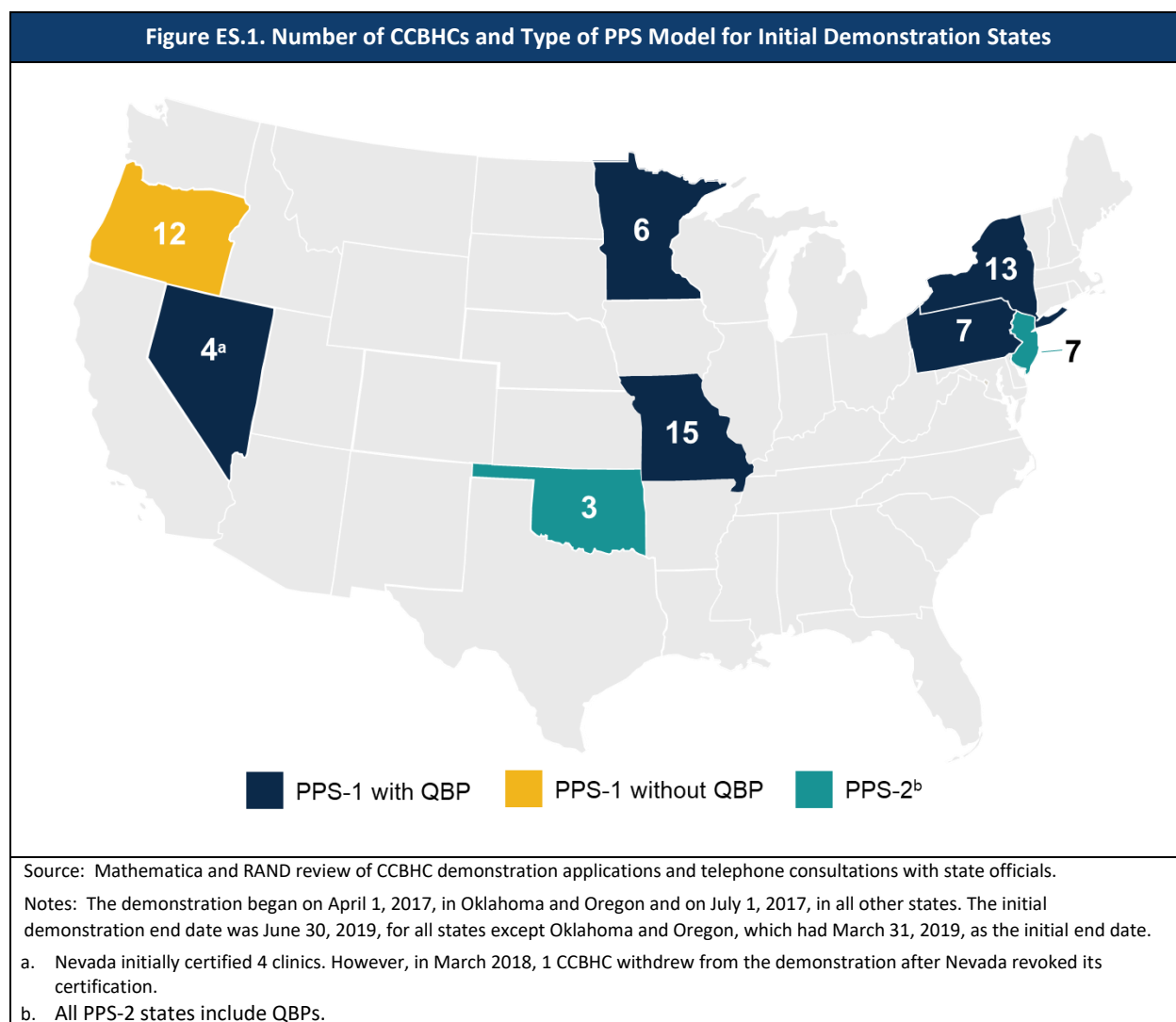
The PPS in each state is designed to provide CCBHCs with the financial support and stability necessary to deliver these required services. States participating in the demonstration select one of the following PPS models to reimburse all CCBHCs in the state: a fixed daily payment (PPS-1) for each day a Medicaid beneficiary receives demonstration services or a fixed monthly payment (PPS-2) for each month in which a Medicaid beneficiary receives demonstration services. States set the payment rates, which can vary across CCBHCs within a state. PPS-1 states have the option to provide CCBHCs with quality bonus payments (QBPs) based on their performance on quality measures. PPS-2 states are required to provide QBPs based on quality measures.

States and CCBHCs are required to report 21 quality measures following each demonstration year (DY). These are calculated from Medicaid claims and managed care encounter data, electronic health records (EHRs), and surveys of CCBHC clients and their family members. These measures assess best practices in care delivery (for example, timely follow-up after discharge from a hospital), outcomes (for example, improvement in depression symptoms), and client and family member experiences with care. Quality measure reporting provides CCBHCs and state officials with standardized metrics to monitor the quality

of care, inform quality improvement efforts, and award QBPs. CCBHCs also submit standardized cost reports to the state following each demonstration year. The cost reports include information on clinic operating costs and the number of daily (for PPS-1 states) or monthly (for PPS-2 states) visits to the clinic in each demonstration year.

B. Certified Community Behavioral Health Clinic Demonstration Roll Out

In October 2015, the U.S. Department of Health and Human Services (HHS) awarded planning grants to 24 states to begin certifying clinics to become CCBHCs, establish their PPS, and develop the infrastructure to support the demonstration. To support the first phase of the demonstration, HHS developed criteria (as required by PAMA) for certifying CCBHCs in six areas: (1) staffing; (2) availability and accessibility of services; (3) care coordination; (4) scope of services; (5) quality and reporting; and (6) organizational authority (SAMHSA 2016a). The criteria provide a framework for the certification of CCBHCs. However, states can exercise some discretion in applying the criteria to support implementation of the CCBHC model in different state and local contexts.



In December 2016, HHS selected eight of the 24 planning grant states to participate in the demonstration (Figure ES.1), based on the ability of their CCBHCs to: (1) provide the complete scope of services described in the certification criteria; and (2) improve the availability of, access to, and engagement of clients with a range of services. Six states selected the PPS-1 model and two selected the PPS-2 model. In August 2020, HHS announced that Kentucky and Michigan would begin participating in the demonstration as a result of expansion of the demonstration by the Coronavirus Aid, Relief, and Economic Security (CARES) Act (P.O. 116-163). However, information about the expected number of clinics and implementation plans for the demonstrations in Kentucky and Michigan was not available for this report. The HHS Substance Abuse and Mental Health Services Administration (SAMHSA) also provides grant support to clinics to implement the CCBHC model through the CCBHC Expansion (CCBHC-E) grant program. CCBHC-E grantees must attest to meeting the same criteria as CCBHCs participating in the demonstration, but the grant does not require states to certify clinics or alter Medicaid reimbursement for the clinics.

Among the initial eight demonstration states, the number of CCBHCs participating in the demonstration and the characteristics of the counties served by those CCBHCs varies across states (Table ES.1). For example, Missouri is implementing the CCBHC demonstration in 15 clinics that serve 78 percent of the counties in the state. In contrast, Nevada is implementing the demonstration in three clinics that serve 18 percent of the counties in the state. Depending on the state, 8-27 percent of CCBHC clients were children or adolescents, 3-22 percent of clients were African American, and 5-41 percent were Hispanic during the first two years of the demonstration. CCBHC clients enrolled in Medicaid only (excluding clients dully enrolled in Medicaid and Medicare) accounted for between 41 percent of clients in Oklahoma to 66 percent of clients in Nevada. Clients who were dually enrolled in Medicaid and Medicare accounted for between 1 percent of CCBHC clients in Nevada to 12 percent of CCBHC clients in Pennsylvania. Finally, those without any insurance accounted for between 3 percent of CCBHC clients in Pennsylvania to 36 percent of CCBHC clients in Oklahoma. The percentage of individuals with “other” insurance types, including Medicare-only, Veterans Health Administration (VHA)/TRICARE, and commercial insurance ranged from approximately 14 percent in Oklahoma to 37 percent in Minnesota.

Table ES.1. Characteristics of CCBHC Counties and Clients

State (number of CCBHCs)	Number of CCBHCs that serve Rural or Frontier Counties	Percent of all Counties in State served by CCBHCs	Percent of Clients Under Age 18	Percent African American Clients	Percent American Indian and Alaskan Native Clients	Percent Hispanic Clients	Percent Medicaid Only Clients	Percent Dually Enrolled in Medicaid and Medicare	Percent Uninsured Clients
MN (6)	3	21%	27%	12%	2%	5%	53%	5%	5%
MO (15)	11	78%	24%	10%	1%	5%	46%	10%	18%
NJ (7)	1	29%	19%	15%	<1%	17%	52%	7%	5%
NV (4)	2	18%	8%	21%	1%	32%	66%	1%	17%
NY (13)	7	65%	22%	21%	1%	17%	62%	7%	4%
OK (3)	2	22%	25%	13%	8%	41%	41%	9%	36%
OR (12)	8	33%	24%	3%	2%	8%	62%	4%	14%
PA (7)	3	10%	20%	22%	<1%	9%	61%	12%	3%

Source: DY1 CCBHC Quality Measure Reports for client demographic characteristics. SAMHSA 2017 Certified Community Behavioral Health Clinic Demonstration Program, Report to Congress 2017 for county information.

Notes: States did not report the demographic characteristics of clients served by CMHCs or other community behavioral health clinics to facilitate direct comparisons with CCBHC clients. The demographic characteristics of CCBHC clients were generally similar in the first and second demonstration years.

Across seven of the eight initial demonstration states, CCBHCs served 304,988 clients in the first demonstration year (DY1) and 332,135 clients in the second demonstration year (DY2), representing a 9 percent aggregate increase across CCBHCs (Table ES.2). Nevada did not report the number of CCBHC clients. Growth in the number of CCBHC clients over the first two years of the demonstration ranged from 1 percent in Oregon to 23 percent in Pennsylvania. Missouri had the most CCBHCs of any state and served the largest number of clients.

State (number of CCBHCs)	Total Clients in DY1	Total Clients in DY2	Increase in Clients from DY1 to DY2	Percent Increase in Clients from DY1 to DY2
Aggregate	304,998	332,135	27,140	9%
MN (6)	23,027	25,402	2,375	10%
MO (15)	121,787	132,562	10,778	9%
NJ (7)	17,851	19,127	1,276	7%
NY (13)	49,903	55,693	5,790	12%
OK (3)	20,610	22,741	2,131	10%
OR (12)	52,911	53,301	390	1%
PA (7)	18,909	23,309	4,400	23%

Source: DY1 and DY2 CCBHC Quality Measure Reports.
 Note: Nevada did not submit the number of CCBHC clients.

C. Evaluation of the Certified Community Behavioral Health Clinic Demonstration

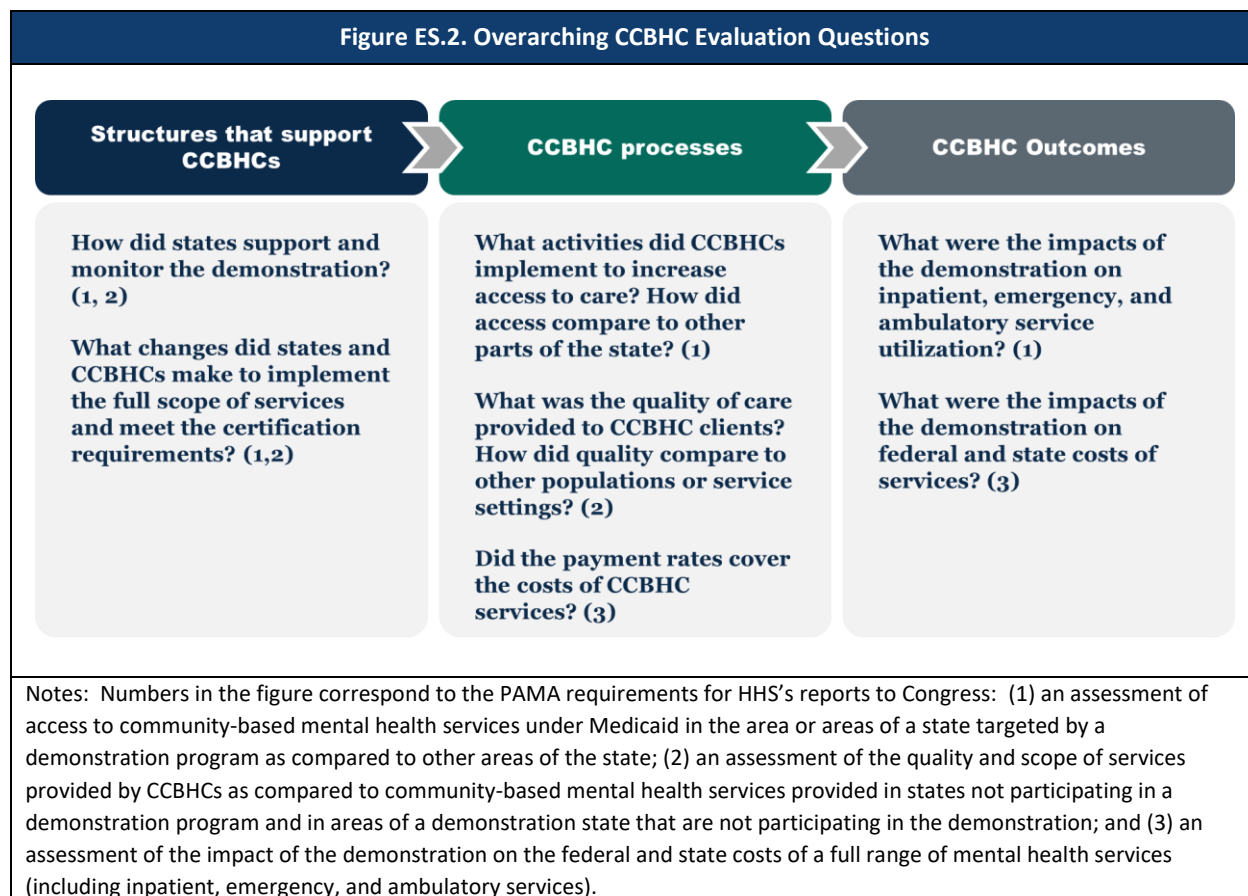
Section 223 of PAMA mandates that HHS submit reports to Congress that assess: (1) access to community-based mental health services under Medicaid in the area or areas of a state targeted by a demonstration program as compared to other areas of the state; (2) the quality and scope of services provided by CCBHCs as compared to community-based mental health services provided in states not participating in a demonstration program and in areas of a demonstration state that are not participating in the demonstration; and (3) the impact of the demonstration on the federal and state costs of a full range of mental health services (including inpatient, emergency, and ambulatory services).

In September 2016, the HHS Office of the Assistant Secretary for Planning and Evaluation (ASPE) contracted with Mathematica and its subcontractor, the RAND Corporation, to evaluate the implementation and impacts of the demonstration and provide information for HHS’s reports to Congress. The evaluation included the eight original demonstration states and covers the two-year period for which the demonstration was initially authorized.

The evaluation was designed to answer several overarching questions that align with the PAMA requirements for HHS’s reports to Congress (Figure ES.2). We grouped these evaluation questions to examine the structures and processes that states and CCBHCs put into place to implement the scope of services and improve access to care, the quality of care delivered to CCBHC clients, the costs of CCBHC services, and changes in Medicaid service use and costs that may have resulted from the demonstration. We developed more detailed evaluation questions linked to each of these overarching questions (see Chapter II).

The evaluation included interviews with state officials and consumer and family representatives at different stages of the demonstration to assess implementation over time; site visits to selected CCBHCs to interview clinic administrators and frontline clinical staff to understand their experiences implementing

the model; analysis of progress reports that CCBHCs submitted in each demonstration year to report their staffing, training activities, accessibility of services, scope of services, EHR/health information technology (HIT) capabilities, care coordination activities, and relationships with other providers; and analysis of the cost reports and quality measures that states and CCBHCs submitted following each demonstration year.



The evaluation also assessed changes in Medicaid service use (including ambulatory visits, ED visits, and hospitalizations) and costs among beneficiaries who received care from CCBHCs relative to beneficiaries with similar demographic and diagnostic characteristics who received care from other (non-certified) community behavioral health clinics in the same state, representing care as usual. Although changes in service use do not necessarily reflect changes in access to care or the quality of care, the findings from these analyses are important to understand how the CCBHC model affects the broader health care system. Hospitalizations and ED visits are typically viewed as unfavorable outcomes from a health system perspective. CCBHCs’ efforts to increase access to care and deliver new services could potentially result in the identification of untreated conditions and increase the use of services. Conversely, providing more comprehensive ambulatory care to CCBHC clients could decrease ED visits and hospitalization rates.

We compared pre-post changes in service use and costs for the treatment group (beneficiaries who received services from clinics that became CCBHCs in the year prior to the demonstration) with pre-post changes in service use and costs for a comparison group (beneficiaries who received services from clinics that did not become CCBHCs in the year prior to the demonstration) within the same state. This study design (commonly referred to as a difference-in-differences design) allowed us to identify changes in

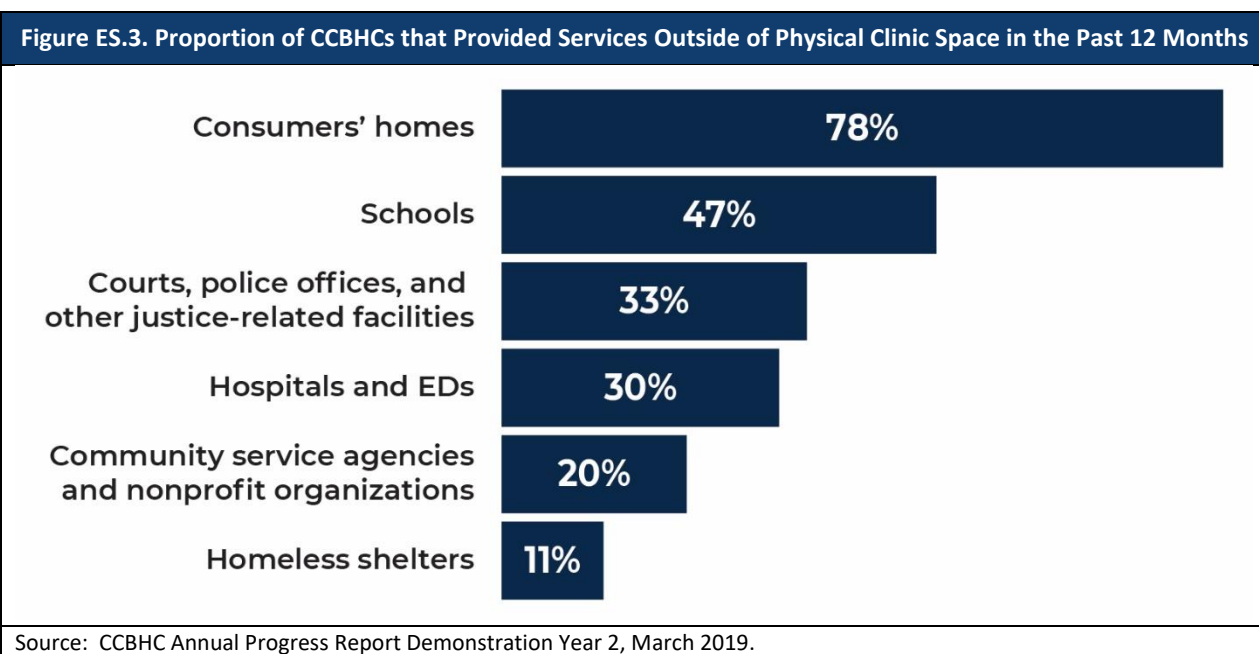
service use and costs attributable to the demonstration, as opposed to general historical trends. This component of the evaluation included only beneficiaries enrolled in Medicaid in the year prior to the demonstration. Due to data or study design limitations in some states, this component of the evaluation was limited to Oklahoma, Pennsylvania, and Missouri. These states provided Medicaid claims and managed care encounter data for the evaluation. We consulted with officials and data experts in these states to define the comparison groups. Most Medicaid services in Pennsylvania and Missouri are delivered through managed care arrangements and the costs for these services were not captured in the Medicaid data available for the evaluation. As a result, analyses of the impact of the demonstration on Medicaid costs were limited to Oklahoma, which provides nearly all Medicaid services on a fee-for-service (FFS) basis.

This final report summarizes key findings for each of the areas related to the PAMA requirements for HHS's reports to Congress and provides information on the implementation experiences of states and CCBHCs with the model. This report builds on interim evaluation reports, which provide detailed information on implementation progress (Wishon Siegwarth et al. 2019) and the costs and quality of care (Breslau et al. 2020a, 2020b).

D. Evaluation Findings

1. Access to community mental health services

The evaluation examined the changes that CCBHCs implemented to increase access to care, improvements in wait-times for initial evaluations at CCBHCs (an indicator of timely access to care), changes in the number of clients served by CCBHCs over time (which may reflect efforts to increase access to care), and the extent to which consumer and family stakeholder representatives reported that access to care changed as a result of the demonstration. We also examined changes in Medicaid service use to understand how the introduction of the CCBHC model affected where and how frequently Medicaid beneficiaries received care.



Activities to increase access to care. CCBHCs implemented a wide range of activities to increase access to care. These activities included, for example, expanding operating hours, accommodating same-day and walk-in appointments, outreach to underserved populations, and moving service delivery beyond the clinic walls to reach people in their homes and communities (Figure ES.3). CCBHCs also established and sustained partnerships with external providers to facilitate referrals and coordinate care. In the first demonstration year, all or nearly all CCBHCs had formal or informal relationships with inpatient psychiatric facilities, residential treatment facilities for SUD, schools, child welfare agencies, adult criminal justice agencies and courts, juvenile justice agencies, primary care providers, and Federally Qualified Health Centers (FQHCs). According to state officials, these efforts to expand access to care were unique to CCBHCs relative to other community behavioral health clinics in the state.

All CCBHCs provided services to individuals regardless of their ability to pay. For comparison, 78 percent of non-CCBHC state-licensed or certified CMHCs in the eight original demonstration states offered treatment at no charge or for minimal payment in 2020 based on an analysis of National Mental Health Services Survey (N-MHSS) data (Wishon et al. 2021).

As noted above (see Table ES.1), the number of clients served by CCBHCs increased by 9 percent from the first to the second demonstration year (this ranged from 1 percent to 23 percent, depending on the state), suggesting that efforts to increase access to care may have been successful at attracting new clients.

Wait-times for initial evaluation. In all but one state, the proportion of new adult clients who received an evaluation within ten business days of their first contact with the CCBHC improved from the first to the second demonstration year (Figure ES.4). On average, adults received an initial evaluation within nine days of contact with the CCBHC in the first demonstration year, which decreased to 5.4 days in the second demonstration year (Figure ES.5). All states except New Jersey and Oregon demonstrated this pattern of improvement.

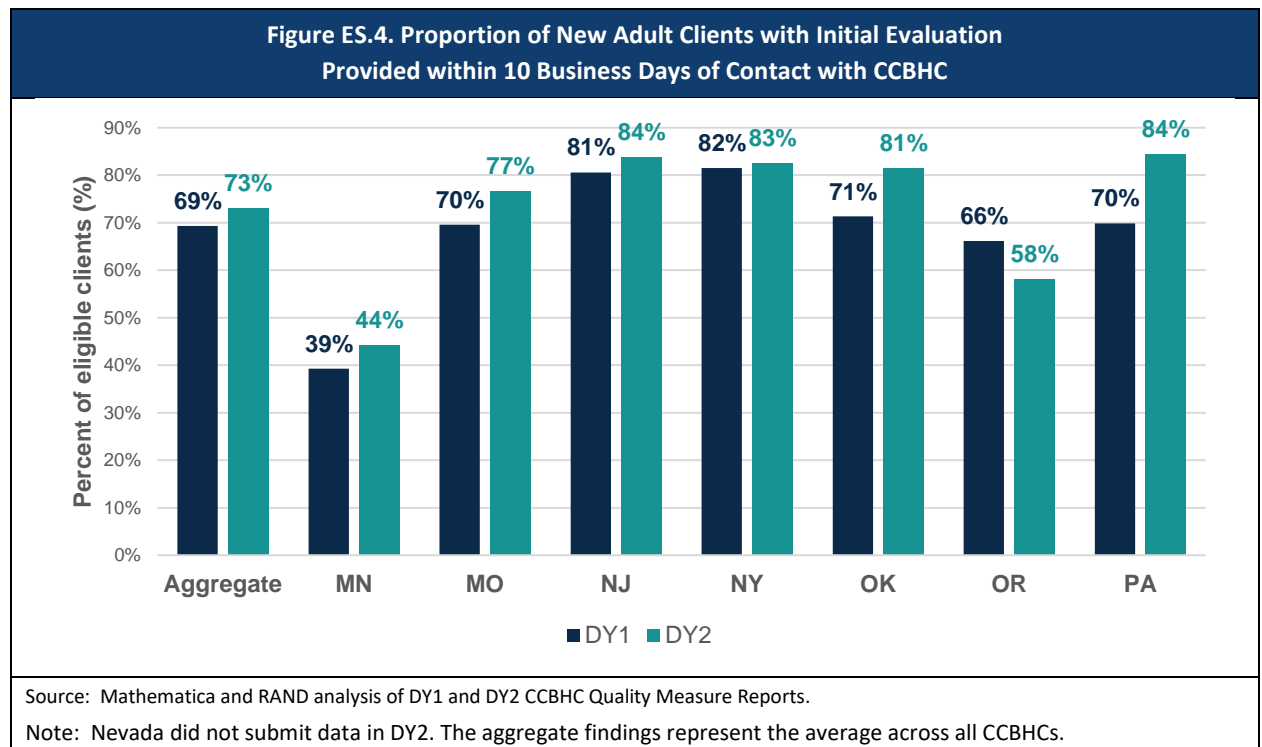
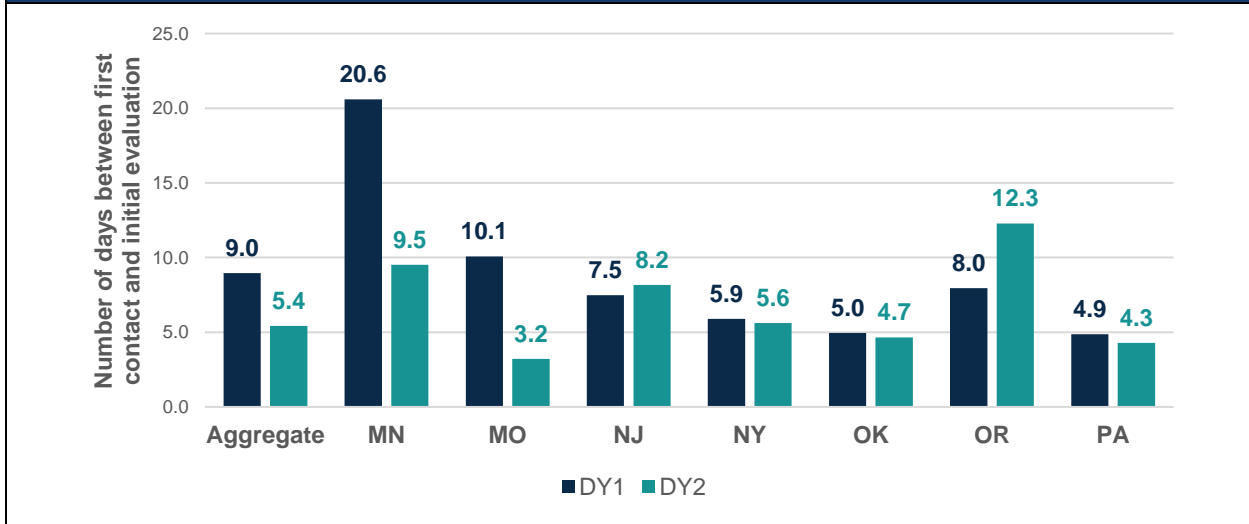


Figure ES.5. Average Number of Days from Initial Contact with CCBHC to Evaluation for New Adult Clients



Source: Mathematica and RAND analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Note: Excludes 1 clinic in Minnesota and 1 clinic in Pennsylvania across years. Nevada did not submit data in DY2. Lower average number of days is better; negative change in days is improvement. The aggregate findings represent the average across all CCBHCs.

Consumer and family stakeholder perceptions of access to care. Consumer and family representatives interviewed in several states credited the demonstration with increasing access to care. These stakeholders praised efforts to accommodate same-day appointments and expand service hours and noted that consumers experienced much shorter wait-times for appointments. These stakeholders also perceived that providing mental health and SUD services for both adults and children at the same location facilitated greater access to comprehensive services for whole families, noting that CCBHCs became more family-oriented environments that offer care to children and their parents. These stakeholders also reported that the inclusion of peer support staff in the CCBHC model was critical to engaging clients and families in treatment. Across states, over 80 percent of adult clients had positive perceptions of access to care in both demonstration years, as reported in the quality measures.

Impact of CCBHCs on service use. Among the three states included in the difference-in-differences analyses, the introduction of the CCBHC model impacted the use of Medicaid services differently in each state (Table ES.3):

- In Missouri, the number of behavioral health-related ambulatory visits increased 5.7 percent among CCBHC clients relative to the comparison group. The demonstration did not impact hospitalization rates or ED visits.
- In Pennsylvania, there was a 7.4 percent reduction in the average number of physical health-related ambulatory visits and a 9.9 percent reduction in the average number of behavioral health-related ambulatory visits among CCBHC clients relative to the comparison group. CCBHC clients did not differ from the comparison group in their probability of having any ED visit during the demonstration, but there was a 13 percent reduction in the average number of behavioral health-related ED visits among CCBHC clients relative to the comparison group (in other words, the likelihood of any ED visit was not different between the two groups but CCBHC clients had fewer behavioral health-related ED visits over time relative to the comparison group). The demonstration did not impact hospitalization rates.

- In Oklahoma, there was a 3 percent reduction in the number of physical health-related ambulatory visits among CCBHC clients relative to the comparison group, but there was no impact on ambulatory behavioral health-related visits. CCBHC clients had a higher probability of any ED visit during the demonstration relative to the comparison group. However, there was an 11 percent reduction in the average number of behavioral health-related ED visits among CCBHC clients relative to the comparison (in other words, although the likelihood of any ED visit was higher among CCBHC clients they had fewer behavioral health-related ED visits over time relative to the comparison group). Finally, CCBHC clients had a lower probability of hospitalization relative to the comparison group during the demonstration, but the demonstration did not impact the average number of hospitalizations. This could, reflect, in part, relatively low hospitalization rates in this state, which could make it difficult to detect changes in averages.

Table ES.3. Summary of Impacts on Service Use Over the First 2 Demonstration Years			
	Missouri	Oklahoma	Pennsylvania
Measures			
Number of inpatient hospitalizations per 1,000 beneficiary years, by type:			
All-cause	No impact	No impact	No impact
Behavioral health-related	No impact	No impact	No impact
Physical health-related	No impact	No impact	No impact
Probability of inpatient stay	No impact	Decreased***	No impact
Number of ED visits per 1,000 beneficiary years, by type:			
All-cause	No impact	No impact	No impact
Behavioral health-related	No impact	Decreased*	Decreased*
Physical health-related	No impact	No impact	No impact
Probability of ED visit	No impact	Increased***	No impact
Number of ambulatory visits per 1,000 beneficiary years, by type:			
All-cause	No impact	No impact	Decreased***
Behavioral health-related	Increased***	No impact	Decreased***
Physical health-related	No impact	Decreased*	Decreased***
Source: Mathematica analyses of Medicaid enrollment and claims data provided by the states of Missouri, Oklahoma, and Pennsylvania.			
Notes:			
* Significantly different from zero at the 0.10 level, two-tailed test.			
** Significantly different from zero at the 0.05 level, two-tailed test.			
*** Significantly different from zero at the 0.01 level, two-tailed test.			

In sum, there was not a consistent pattern across states in how the introduction of the CCBHC model impacted hospitalization rates, ED visits, or ambulatory service use. Changes in ambulatory service use do not necessarily indicate better or worse access to care. In the context of this demonstration, in which CCBHCs are paid either a daily or monthly rate to provide comprehensive services, an increase in daily or monthly ambulatory visits among CCBHC clients could indicate that CCBHCs are providing needed services. A decrease in daily or monthly ambulatory visits among CCBHC clients could indicate that CCBHCs are able to provide the necessary services in fewer visits. Theoretically, the delivery of more comprehensive services (regardless of the number of visits) might correspond with a decrease in ED visits or hospitalization rates. However, across these states, there was no consistent pattern in the relationship between changes in ambulatory visits and ED visits. The demonstration also did not impact hospitalization rates in any state.

The variation in findings across states could reflect differences in how the model was implemented across states as well as other state contextual factors that are not directly measurable using Medicaid data. As noted above, Missouri implemented the CCBHC model in a larger number of clinics that served the majority of counties whereas Pennsylvania and Oklahoma implemented the model within certain regions. There were also differences across states in some of the demographic and diagnostic characteristics of Medicaid beneficiaries included in the final analytic samples. For example, 56 percent of the study population in Missouri qualified for Medicaid on the basis of disability compared to only one-quarter of the population in Oklahoma and Pennsylvania. The population in Missouri was also, on average, older (mean age = 31 years) than the populations in Oklahoma (mean age = 24 years) and Pennsylvania (mean age = 25 years). The racial composition of the populations (as recorded in Medicaid eligibility data) also varied by state; 79 percent of beneficiaries in Missouri were White compared to 62 percent in Oklahoma and Pennsylvania. Oklahoma had a much higher proportion of beneficiaries in the “other” race category (25 percent) relative to other states (15 percent in Pennsylvania and 4 percent in Missouri). Beneficiaries included in the analytic sample for each state primarily had diagnoses of anxiety disorders, bipolar disorders, depressive disorders, or schizophrenia and other psychotic disorders in the year prior to the demonstration but this varied somewhat across state (66 percent in Pennsylvania, 75 percent in Oklahoma, and 83 percent in Missouri). Across states, approximately one-quarter of beneficiaries in the final analytic sample had an SUD diagnosis in the year prior to the demonstration (22 percent in Missouri, 23 percent in Oklahoma, and 25 percent in Pennsylvania), but the proportion of beneficiaries with an opioid use disorder in Pennsylvania (12 percent) was more than twice the proportion in the other two states (5 percent in both states).

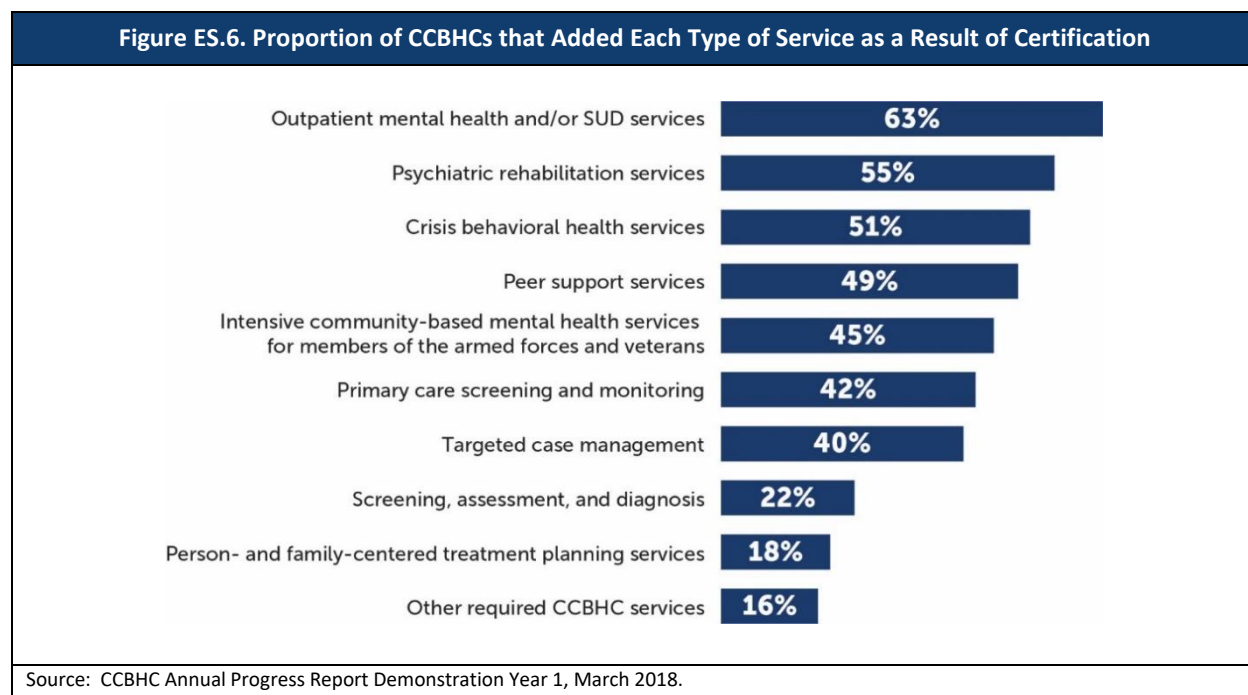
These impact findings are limited to the first two years of the demonstration. There are also several limitations to the analysis. Although the evaluation used the strongest design to avoid potentially misattributing impacts of the demonstration to changes over time in the case-mix of CCBHCs, it required limiting the analytic population to beneficiaries enrolled in Medicaid and receiving care from these clinics prior to the demonstration. This does not compromise the validity of the findings, but the results are best interpreted as the impacts among beneficiaries who were already engaged in care as opposed to those who newly entered services after the demonstration began. The introduction of the CCBHC model could impact clients who are not already engaged in care differently from those who have an existing relationship with a community behavioral health clinic. As the demonstration continues and expands to other states, there may be opportunities to implement alternative evaluation designs to capture impacts on clients newly seeking services at CCBHCs. Finally, although the treatment and comparison groups within each state were comparable on key characteristics, and there was adequate sample size to detect impacts, it is possible that the final population included in the comparison group differed from clients in the CCBHC group on characteristics that are not measurable using Medicaid data. This may have been particularly relevant to Missouri, where the remaining areas of the state not affected by the demonstration were more limited than the other states.

2. Scope of services

The demonstration establishes a minimum scope of services for CCBHCs and requires states and CCBHCs to adopt evidence-based practices (EBPs). However, the demonstration allows states to select EBPs that address the needs of communities and align with Medicaid State Plans and other state regulations. The evaluation examined the types of staff and services that CCBHCs added to meet the certification requirements and the partnerships that CCBHCs developed to deliver the required services and coordinate care. CCBHCs varied widely in the types of services they provided and populations they

served prior to the demonstration, and consequently required different changes to meet certification requirements. However, officials reported that, as a result of the certification process, CCBHCs provided a more comprehensive and broader range of services than other community behavioral health clinics in the state. CCBHCs were generally able to sustain the delivery of the required services throughout the demonstration.

Expansion of services to meet CCBHC criteria. Nearly all clinics expanded or added services to meet CCBHC certification requirements (Figure ES.6). CCBHCs most often added services within the categories of outpatient mental health and/or SUD services, psychiatric rehabilitation services, crisis services, and peer support.



CCBHCs offered a wide range of EBPs and rehabilitative services consistent with the certification criteria (Table ES.4). All or nearly all CCBHCs provided motivational interviewing, individual and group cognitive behavioral therapy (CBT), peer support for clients, emergency crisis intervention, 24-hour mobile crisis teams, crisis stabilization, primary care screening and monitoring, TCM, evidence-based medication evaluation and management, and medication-assisted treatment (MAT) for alcohol and opioid use. Most CCBHCs provided community wraparound services for youth/children, dialectical behavioral therapy, peer support for families, supported employment, supported housing, and supported education. The evaluation did not obtain data from all CMHCs or community behavioral health clinics across states to facilitate direct comparisons with CCBHCs, but 2020 N-MHSS data suggest that several of these services were less frequently available from other CMHCs in the demonstration states (Wishon et al. 2021); in 2020, only 49 percent of state-licensed or certified CMHCs (that were not CCBHCs) in demonstration states provided any type of SUD treatment, 59 percent had a crisis intervention team, 43 percent provided peer support, 40 percent offered on-site services for psychiatric emergencies, and 27 percent provided supported housing.

Many of these services were added as a result of the CCBHC certification process (Table ES.4). For example, 46 percent of CCBHCs added 24-hour mobile crisis teams, 46 percent added MAT, 43 percent

added peer support for clients, 42 percent added primary care screening and monitoring, 40 percent added TCM, 34 percent added peer support for families, and 31 percent added emergency crisis intervention and crisis stabilization.

Table ES.4. Proportion of CCBHCs that Offer Select EBPs and Other Services			
EBP or Service	Offered in DY1	Offered in DY2	Added to Meet CCBHC Certification Requirements
Motivational interviewing*	100%	100%	9%
Individual CBT*	100%	100%	4%
Peer support for clients	100%	100%	43%
Emergency crisis intervention	100%	100%	31%
24-hour mobile crisis teams	97%	98%	46%
Crisis stabilization	99%	97%	31%
Primary care screening and monitoring	97%	91%	42%
TCM	94%	100%	40%
Evidence-based medication evaluation and management*	87%	94%	7%
Group CBT*	84%	88%	6%
MAT for alcohol or opioid use*	84%	92%	46%
Community wraparound services for children and youth*	76%	77%	15%
DBT*	73%	76%	7%
Peer support for families	73%	83%	34%
Supported employment	75%	82%	27%
Supported housing	70%	79%	12%
Intensive community-based services for members of the armed forces and veterans	72%	67%	45%
Supported education	54%	68%	16%
Multisystemic therapy*	40%	56%	7%

Source: CCBHC Annual Progress Report Demonstration Year 1 and Year 2, March 2018 and March 2019.
 * EBP included in the CCBHC certification criteria.

CCBHCs delivered most of the required services directly rather than engaging external providers in DCO relationships. This was true for many of the new services that CCBHCs added to meet the certification requirements. For example, only one of the 61 CCBHCs that provided MAT in the second demonstration year engaged a DCO to provide these services. CCBHCs cited concerns about their ability to maintain clinical responsibility for services provided through DCOs and uncertainty about how the PPS would work under DCO arrangements as reasons for preferring to provide services directly. Some CCBHCs also preferred to build their own internal service capacity through the demonstration. The exception was suicide/crisis hotlines or warmlines; 30 percent of CCBHCs developed DCO relationships with these types of providers, most often formalizing their existing relationships with these providers.

Staff hiring and training. States and CCBHCs reported that the PPS model allowed clinics flexibility to hire different types of staff and form treatment teams that were tailored to the needs of their clients. CCBHCs employed a wide range of staff before the demonstration. CCBHCs most often hired case managers, peer specialists/recovery coaches, psychiatrists, and family support workers during the CCBHC certification process, and most CCBHCs were able to retain these staff over the first two years of the demonstration (Table ES.5).

In the first demonstration year, 93 percent of CCBHCs provided training in risk assessment, suicide prevention, and suicide response; 91 percent provided training in evidence-based and trauma-informed care; 88 percent provided training in cultural competency; and 76 percent provided training in family-centered care, recovery-oriented care, and primary and behavioral health care integration. A similar proportion of CCBHCs provided these trainings in the second demonstration year.

Table ES.5. Proportion of CCBHCs that Employed Select Types of Staff			
Staff	Employed Before Demonstration	Employed During First Demonstration Year	Employed During Second Demonstration Year
Psychiatrists for adults	70%	91%	82%
Child/adolescent psychiatrist	58%	76%	64%
Case management staff	72%	97%	97%
Peer specialist/recovery coaches	69%	99%	100%
Family support staff	37%	67%	68%

Source: CCBHC Annual Progress Report Demonstration Year 1 and Year 2, March 2018 and March 2019.
 Note: Figure III.3 in Chapter III provides a more comprehensive list of staff that CCBHCs employed before and during the demonstration.

Composition of treatment teams. In the first demonstration year, 76 percent of CCBHCs reported a change in the membership of their treatment teams as a result of the certification process and 58 percent of CCBHCs continued to make some changes to their treatment teams in the second demonstration year. In both years, nearly all CCBHCs reported including case managers and consumers/clients on treatment teams in addition to mental health providers, SUD providers, and psychiatrists; 78 percent of CCBHCs included clients' family members on treatment teams. Only 48 percent of CCBHCs included primary care physicians (PCPs) on treatment teams in the second demonstration year.

Primary care services. Ninety-one percent of CCBHCs reported offering primary care screening and monitoring in the second demonstration year and 99 percent reported some type of partnership with a primary care provider. Although not required in the certification criteria, 55 percent of CCBHCs provided on-site primary care. However, 84 percent of those clinics were already providing on-site primary care before the demonstration (only six CCBHCs added on-site primary care during or after the CCBHC certification process). Some states established primary care requirements for CCBHCs that went beyond the certification requirements. For example, Oregon required its CCBHCs to provide 20 hours of on-site primary care services per week beginning in the second demonstration year.

CCBHCs varied, however, in their ability to capture physical health information and coordinate physical health care with other providers. Only 56 percent of CCBHCs had EHRs that included primary care records and only 45 percent reported that their EHRs allowed electronic exchange of clinical information with any external provider.

Fifty-eight percent of CCBHCs reported receiving a notification (electronic or otherwise) when a hospital treated a CCBHC client for a physical health condition and 53 percent reported receiving a notification when an ED treated a CCBHC client for a physical health condition.

In sum, CCBHCs expanded their scope of services, which included the adoption of various EBPs, rehabilitative services, and primary care screening and monitoring. They also hired and trained staff to support the delivery of these services. Data were not available to facilitate a direct comparison between all the services provided by CCBHCs with other clinics in the state or with clinics in other states. However, state officials reported that CCBHCs provided a more comprehensive and broader range of

services relative to other community behavioral health clinics in the state, and the findings from N-MHSS described above support their observations.

Table ES.6. Quality of Care Provided to CCBHC Clients Compared to Medicaid Benchmarks in DY1 and DY2							
Quality Measure	MN	MO	NJ	NY	OK	OR	PA
AMM, continuation phase, adults	Below	Exceeded	NA	Met	Exceeded ^a	NA	Met ^b
Initiation of AOD Dependence Treatment, adults	Met ^a	Met	NA	Exceeded	NR	Exceeded	Below
Engagement of AOD Dependence Treatment, adults	Met ^a	Exceeded	NA	Exceeded	NR	Met	Below
Follow-up After ED Visit for Mental Illness, all ages	Exceeded	Exceeded	Below	Exceeded	Exceeded	Exceeded	NR
Follow-up After ED Visit for AOD Dependence, all ages	Exceeded	Met	NA	Exceeded	Exceeded ^b	NA	Exceeded
Follow-up After Hospitalization for Mental Illness, adults	Exceeded	Exceeded	Met ^b	Exceeded ^c	Exceeded	NA	Below
Follow-up After Hospitalization for Mental Illness, child/adolescent	Exceeded ^d	Exceeded	Met ^b	Met ^c	Exceeded	NA	Below
Follow-Up Care for Children Prescribed ADHD Medication	NA	NA	NR	Exceeded	Exceeded	NR	Exceeded
Plan All-Cause Readmission (PCR-BH), adults	Below	Below ^c	Exceeded ^b	Exceeded ^a	Exceeded	NA	Exceeded ^b
Adherence to Antipsychotic Medications for Individuals with Schizophrenia, adults	NA	Met	NA	Below	NA	NA	Below

Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Nevada did not submit data in DY2. Benchmarks from the Annual Reporting on the Quality of Care for Adults in Medicaid (FFY 2018 for DY1 and FFY 2019 for DY2), available at <https://www.medicaid.gov/medicaid/quality-of-care/performance-measurement/adult-and-child-health-care-quality-measures/adult-core-set/index.html>. For most states and measures, the findings were the same in both demonstration years unless otherwise noted.

a. No benchmark available in DY1. Classification based on DY2 performance.
b. Performance below benchmark in DY1. Classification based on DY2 performance.
c. No DY2 benchmark. Classification based on DY1 performance.
d. Met performance in DY1.

Exceeded = performance for CCBHC clients at least 5% better than state Medicaid benchmark.
Met = performance for CCBHC clients within 5% of state Medicaid benchmark.
Below = performance for CCBHC clients at least 5% worse than state Medicaid benchmark.
NA = Medicaid benchmark not available in either demonstration year.
NR = Measure performance for CCBHC clients not reported due to small sample size or deviation in measure reporting that compromised comparison with Medicaid benchmark.

3. Quality of care

The delivery of comprehensive services and care coordination, the addition of staff, and provision of additional training could lead to improvements in the quality of care. Conversely, quality of care could suffer if the PPS incentivizes CCBHCs to deliver fewer services while still collecting the daily or monthly payment. The evaluation examined performance on the 21 quality measures (representing eight domains of quality) that states and CCBHCs reported. The analysis assessed how the quality of care delivered to CCBHC clients compared to state Medicaid benchmarks and assessed changes in the quality of care over time. Since these measures were not reported by similar clinics in regions of the state that did not participate in the demonstration, direct comparisons between CCBHCs and comparable non-CCBHC behavioral health clinics were not possible. However, comparing the quality of care provided to CCBHC clients with state Medicaid benchmarks for the same measures provides context for understanding whether CCBHC clients received higher-quality care than the broader group of Medicaid beneficiaries in

the state. Interpretation of CCBHC performance relative to these benchmarks should consider that the populations treated in CCBHCs are likely to be more severely ill and disadvantaged than the broader Medicaid population with these conditions.

According to state officials, most CCBHCs did not have previous experience reporting the quality measures required for the demonstration and CCBHCs' data systems did not always facilitate reporting the measures before the demonstration. As a result, 97 percent of CCBHCs enhanced their EHRs and/or other HIT to capture the information they were required to report; 33 percent of CCBHCs adopted a new EHR or HIT system (most often in addition to making changes to their existing systems). Modifying data systems required considerable resources and staff time. State agencies played a critical role in providing technical assistance to help CCBHCs make these changes and, in some states, helped clinics link to external data systems. In contrast, calculating the state-reported measures generally did not require major changes to state data systems.

Quality measure performance among CCBHC clients relative to Medicaid benchmarks. Several of the quality measures used in the demonstration align with measures that state Medicaid programs voluntarily report to the HHS Centers for Medicare & Medicaid Services (CMS) for the Medicaid and Children's Health Insurance Program (CHIP) Child and Adult Core Sets of Quality Measures (Table ES.6). This facilitated comparisons between the quality of care provided to CCBHC clients with a state benchmark for the same measure. However, not all state Medicaid programs submitted performance on every measure to the Medicaid and CHIP Adult and Child Core Sets in each year. As a result, this comparison was only feasible for a subset of states, depending on the measure.

For several measures, the quality of care provided to CCBHC clients most often met or exceeded the quality of care provided to the broader Medicaid population in states where data were available to make these comparisons (Table ES.6):

- The proportion of adult CCBHC clients with major depression who received antidepressants and continued those antidepressants for at least six months was similar or better than the state Medicaid average in four of the five states where comparisons were possible.
- The proportion of adult CCBHC clients who initiated treatment for alcohol or other drug (AOD) use within 14 days of their initial AOD diagnosis and the proportion who remained engaged in care (defined as having at least two other AOD visits within 30 days of the initial AOD visit) was similar or better than the state Medicaid average in four of the five states where comparisons were possible.
- The proportion of all CCBHC clients who received follow-up care within 30 days after an ED visit for a mental health condition or AOD use was similar or better than the state Medicaid average in five of the six states where comparisons were possible.
- The proportion of adult and child/adolescent CCBHC clients who received follow-up care within 30 days of discharge from a hospital for a mental health condition was also similar or better than the state Medicaid average in five of the six states where comparisons were possible.
- The proportion of adult CCBHC clients who were readmitted to a hospital within 30 days of discharge was lower than the state Medicaid average in four of the six states where comparisons were possible.
- The proportion of children/adolescents receiving care from CCBHCs prescribed medication for attention deficit hyperactively disorder (ADHD) who had a visit with a provider with prescribing

authority within 30 days after starting the ADHD medication was better than the state Medicaid average in all three states where comparisons were possible.

There was one measure for which the quality of care provided to CCBHC clients never exceeded the state Medicaid average: Adherence to antipsychotic medications (defined as receiving antipsychotic medications for at least 80 percent of the days enrolled in Medicaid during the year) among adults with schizophrenia who received care from CCBHCs was similar to the Medicaid state average in one state but worse in two states. However, this comparison was only possible in three states. As shown in Table ES.6, performance on some measures was worse among CCBHC clients relative to the state Medicaid average, indicating room for improvement. In addition, some states without benchmarks for a particular measure demonstrated high performance. For example, 93 percent of adults discharged from a hospital for a mental health condition in Oregon received follow-up care within 30 days of discharge in the second demonstration year, relative to an average performance rate of 63 percent across all demonstration states.

Change in quality of care during the demonstration. Performance on several of the measures that assessed process of care within CCBHCs (such as those focused on timely access to care and screening and assessment for specific conditions) improved from the first to the second demonstration year (Table ES.7). For example, the proportion of adult CCBHC clients with a new episode of depression who received a suicide risk assessment (SRA) increased in all but one state; however, there was room for improvement in some states. Likewise, rates of screening and follow-up care for tobacco use, unhealthy alcohol use, and body mass index (BMI) also generally improved from the first to the second demonstration year. These improvements may reflect changes that CCBHCs made in response to first year performance on the measures, such as implementing new screening processes. Some CCBHCs also made changes to how the data for the quality measures were collected in the second demonstration year, including continuing enhancements to EHRs and other data systems, which could have influenced changes in performance rates.

Table ES.7. Change in Quality of Care for CCBHC Clients During Demonstration									
Measure Domain	Measure Description	Measure Name	MN	MO	NJ	NY	OK	OR	PA
Domain 1: Access to care and timeliness of initial evaluation	Time to Initial Evaluation, adult	I-EVAL ^c							
Domain 2: Depression and suicidality screening and follow-up	Child and Adolescent Major Depressive Disorder: Suicide Risk Assessment	SRA-BH-C ^c							
	Adult Major Depressive Disorder: Suicide Risk Assessment	SRA-A ^c							
	Screening for Clinical Depression and Follow-up Plan	CDF-BH ^c							
	Depression Remission at 12 Months	DEP-REM-12 ^c			n/a				
Domain 3: Psychiatric medication management and adherence	Adherence to Antipsychotic Medications for Individuals with Schizophrenia	SAA-BH ^s							
	Antidepressant Medication Management	AMM-BH-cont.							

Table ES.7 (continued)

Measure Domain	Measure Description	Measure Name	MN	MO	NJ	NY	OK	OR	PA
Domain 4: Follow-up and medication management for children/adolescents with ADHD	Follow-up Care for Children Prescribed ADHD Medication	ADD-BH-cont.	▲	▲	n/a	▲	▲	n/a	▼
Domain 5: Physical health care	Adult Body Mass Index Screening and Follow-up Plan	BMI-SF ^c	▲	▲	▲	▲	▲	○	○
	Weight Assessment for Nutrition and Physical Activity for Children/Adolescents	WCC-BH ^c	▲	▲	▲	▲	▲	▲	▲
	Diabetes Screening for People with Schizophrenia or Bipolar Disorder who are Using Antipsychotic Medications	SSD ^s	○	○	▲	○	○	○	○
Domain 6: Substance use screening and treatment	Tobacco Use - Screening and Cessation Intervention	TSC ^c	▲	▲	▲	▲	▲	▲	▲
	Unhealthy Alcohol Use - Screening and Brief Counseling	ASC ^c	▲	▲	○	▲	▲	▲	▲
	Initiation and Engagement of AOD Dependence Treatment	IET-BH ^s	○	○	▲	○	n/a	○	○
Domain 7: ED and hospital transitions	Follow-up After ED Visit for Mental Illness	FUM ^s	○	○	○	○	○	○	n/a
	Follow-up After ED Visit for Alcohol or Other Dependence	FUA ^s	○	○	○	○	▲	○	○
	Follow-up After Hospitalization for Mental Illness, adult	FUH-BH-A ^s	○	○	▲	○	▼	○	▼
	Follow-up After Hospitalization for Mental Illness, child/adolescent	FUH-BH-C ^s	▲	○	▲	○	○	▼	▼
	Plan All-Cause Readmission Rate, adult	PCR-BH ^s	○	○	▼	▼	○	○	▲
Domain 8: Consumer and family experiences with CCBHCs	Patient Experience of Care Survey, adult	PEC ^s	○	○	▲	○	○	○	▲
	Youth/Family Experience of Care Survey	Y/FEC ^s	○	▲	○	○	○	○	○
<p>Source: Mathematica and RAND analysis of DY1 and DY2 CCBHC Quality Measure Reports. Notes: Nevada did not submit data in DY2. Change definitions are as follows: ▲ Improved = 5% or more improvement in aggregate performance across CCBHCs in state from DY1 to DY2. ▼ Declined = 5% or more decline in in aggregate performance across CCBHCs in state from DY1 to DY2. ○ Stable. ^c = Clinic-reported measure. ^s = State-reported measure.</p>									

There was less improvement on measures that assessed transitions between settings of care (for example, follow-up after discharge from a hospital) and medication management and adherence, which were reported using Medicaid claims data. This could reflect that changing performance on some of these measures requires CCBHCs to have partnerships with hospitals or other entities, which may require more time to put into place. There were some indications from the progress reports that the strength of such partnerships varied across CCBHCs. For example, in the second demonstration year, about one-quarter of CCBHCs reported that they did not receive notifications from ED or hospitals when a client in their care was treated for behavioral health conditions in those settings. Improving performance on measures of

antidepressant medication management or adherence to antipsychotics might also require more time to put into place processes for monitoring and following-up with clients.

Awarding of QBPs. CCBHCs in states with QBPs were required to achieve state-defined performance thresholds on six measures (Table ES.8). States could also require CCBHCs to meet performance thresholds on additional measures included in the PPS guidance or other measures with approval from CMS. States set the amount of the QBPs and had the option to modify the parameters of the QBPs from the first to the second demonstration year.

States varied in the performance thresholds used to award QBPs. For example, some states awarded QBPs if performance on the measures met or exceeded state or national averages. Other states specified targets for particular measures (for example, at least a 10 percent improvement toward a specified goal) or required CCBHCs to improve from year to year without a specified target. Some states used data from the first six months or year of the demonstration to establish performance thresholds.

Table ES.8. Quality Measures Used in QBP Systems							
Measure	MN	MO	NJ	NV	NY	OK	PA
Required measures for QBPs							
Follow-Up After Hospitalization for Mental Illness, ages 21+ (adult) (FUH-BH-A)*	✓	✓	✓	✓	✓	✓	✓
Follow-Up After Hospitalization for Mental Illness, ages 6-21 (child/adolescent) (FUH-BH-C)*	✓	✓	✓	✓	✓	✓	✓
Adherence to Antipsychotic Medications for Individuals with Schizophrenia (SAA-BH)	✓	✓	✓	✓	✓	✓	✓
Initiation and Engagement of Alcohol and Other Drug Dependence Treatment (IET-BH)*	✓	✓	✓	✓	✓	✓	✓
Adult major depressive disorder: Suicide Risk Assessment (SRA-BH-A; NQF-0104)*	✓	✓	✓	✓	✓	✓	✓
Child and adolescent major depressive disorder: Suicide Risk Assessment (SRA-BH-C)*	✓	✓	✓	✓	✓	✓	✓
Optional measures included in PPS guidance to states							
Plan All-Cause Readmission Rate (PCR-AD)	✓			✓	✓		
Screening for Clinical Depression and Follow-Up Plan (CDF-A)	✓						
Follow-up Care for Children Prescribed ADHD Medication (ADD-C)							
Antidepressant Medication Management (AMM-A)							
Depression Remission at 12 Months (NQF-0710)							
Source: "Appendix III - Section 223 Demonstration Programs to Improve Community Mental Health Services Prospective Payment System (PPS) Guidance." Available at https://www.samhsa.gov/sites/default/files/grants/pdf/sm-16-001.pdf#page=94 . Accessed July 26, 2019. Data from interviews with state Medicaid and behavioral health agency officials conducted by Mathematica and the RAND Corporation, February 2019.							

States also varied in how they tied measure performance to the amount of the QBPs. For example, some states created a sliding scale in which the lowest-scoring CCBHC received no payment and the highest-scoring CCBHC received the maximum payment for a particular measure. Some states also tied the amount of QBPs to the magnitude of improvement on a measure. For example, 1 percent improvement above a specified performance threshold received 10 percent of the QBP, whereas 10 percent

improvement above the threshold would earn 100 percent of the QBP. In sum, no two states had an identical QBP structure even though they used the same required measures.

Across states, 54 of the 67 participating CCBHCs were eligible for QBPs during the first and second demonstration years: 33 received QBPs in the first demonstration year and 27 received QBPs in the second demonstration year. Missouri, New Jersey, and Pennsylvania awarded bonus payments to all or nearly all CCBHCs in each year. Minnesota awarded QBPs to some CCBHCs in each year. New York and Oklahoma did not award any QBPs in either year because CCBHCs either did not meet the performance thresholds or funding was not available at the time of this report. Given the modest number of CCBHCs and demonstration states, we were not able to draw conclusions about the extent to which the QBPs incentivized higher-quality care. However, performance improved or was stable on at least four of the six measures that states were required to use to award QBPs. This could suggest that the QBPs incentivized continued or improving quality of care in the areas assessed by the required measures, but it is also possible that performance on these measures would have changed in the same way over the same period of time without the QBPs.

There were also some indications that the functioning of the QBP systems varied from states' expectations. Some states substantially overestimated or underestimated the anticipated amount of the QBPs at the beginning of the demonstration relative to the amount awarded. For example, Missouri officials anticipated awarding approximately \$4 million in QBPs in each demonstration year but awarded over \$17 million in the first year and \$19 million in the second year. In contrast, New Jersey anticipated awarding about \$350,000 in QBPs in each demonstration year but only awarded about \$27,000 in each year. This divergence from expectations could reflect the challenges of predicting performance on the measures in the absence of good historical data or could indicate an opportunity to refine the parameters of the QBP systems. These experiences from the first two years of the demonstration could inform other states' expectations and the design of QBP systems in the future.

In sum, for most measures, the quality of care provided to CCBHC clients was comparable or better than the quality of care provided to state Medicaid benchmarks where comparisons were possible. Performance on several quality measures improved from the first to second demonstration year, depending on the state. Quality of care worsened for few measures during the demonstration but there was room for improvement in some states depending on the measure. More evidence is needed to compare the quality of care provided to CCBHC clients relative to beneficiaries served by other community behavioral health clinics and to understand whether the QBPs incentivized better care.

4. Payment rates and costs

Historically, Medicaid has reimbursed community behavioral health clinics through FFS or managed care rates, and some evidence suggests that these rates did not cover the full cost of clinic services (Scharf et al. 2015). The demonstration addresses this problem by allowing states to develop a PPS that reimburses CCBHCs based on expected cost of providing comprehensive services to all individuals who seek care, based on projected costs. PAMA does not require that the demonstration achieve cost neutrality. Rather, the demonstration was designed to provide CCBHCs with more financial resources. As described above, states chose between PPS models developed by CMS (although states were allowed some flexibility in operationalizing the models):

- PPS-1 provides CCBHCs with a fixed payment for each day that a Medicaid beneficiary receives demonstration services from the clinic (known as a visit-day). This payment model resembles how

FQHCs are paid. As described above, the PPS-1 model includes a state option to provide QBPs to CCBHCs that first meet performance thresholds on the six measures required by CMS and any additional state-specified performance requirements on quality measures.

- PPS-2 provides CCBHCs with a fixed payment for each month in which a Medicaid beneficiary receives demonstration services from the clinic (known as a visit-month). PPS-2 rates have multiple categories--a standard rate and separate rates for special populations that the state defines. As described above, the PPS-2 model requires states to award QBPs based on meeting performance thresholds on the six measures required by CMS, and outlier payments for costs above a specific threshold.

These payment models enable CCBHCs to exercise considerable flexibility in tailoring services to the needs of their clients without being concerned about the financial impact of each service decision or procedure. Ideally, in contrast with FFS systems, where each additional service brings an additional payment, the PPS should not incentivize providing high volumes of care. Rather, the amount that clinics are paid is determined by the average cost of care, regardless of the quantity of services provided on a given day or month. While there is an incentive for clinics to have more frequent visits with clients, particularly under PPS-1, this incentive only operates over the short term because states have the option to adjust the payment rates based on the cost data from the previous year (a process known as re-basing). If a clinic has many visit-days or visit-months in a year, it will collect more reimbursement during that year, but the state can adjust the rates for the next year to bring them in alignment with actual costs. In this context, cost-reporting provided critical information for states to set and adjust payment rates over time. New York was the only demonstration state in which the clinics that became CCBHCs had experience completing and submitting cost reports prior to the demonstration. All states provided CCBHCs with technical assistance to complete the cost reports.

The evaluation used all available cost data from the demonstration to assess the extent to which payment rates covered the costs of CCBHC services in each demonstration year and describe variation in the average costs of CCBHC services per client and per visit-day (for PPS-1 states) or visit-month (for PPS-2 states). The evaluation also examined how the introduction of the CCBHC model in Oklahoma impacted Medicaid costs. Together, these findings can inform future rate-setting and cost estimates for the demonstration.

Payment rates. States initially struggled to set rates that reflected CCBHC costs, in part, because they did not always have good data to inform cost projections. The rate-setting process required accurate data for calculating the allowable costs and number of visit-days or visit-months. It also required clinics to forecast anticipated changes in costs as a result of implementing the CCBHC certification criteria. Since the clinics would be broadening their scope of services to meet the criteria, they would generally be increasing their total operating costs. However, because there was a lack of historical data on the actual costs of providing the enhanced scope of services, clinics had to estimate these future costs, which included staffing, spending on training or infrastructure, and other anticipated costs approved by the state.¹

CCBHC payment rates varied within and across states. The average daily rate across the 56 CCBHCs in PPS-1 states was \$281 in DY1 and \$245 in DY2. The average standard monthly rate across the ten CCBHCs in PPS-2 states was \$669 in DY1 and \$710 in DY2. For some states, such as Minnesota and

¹ The CMS's Office of Management and Budget approved cost report included cells for clinics to provide estimated costs of newly provided services.

Pennsylvania, rates varied widely across CCBHCs, whereas in other states, such as Missouri and Nevada, the rates varied less across CCBHCs. This within-state variation was driven, in part, by clinic location and differences in staffing and staff salaries.

Minnesota, New Jersey, New York, Nevada, Oklahoma, and Pennsylvania re-based DY2 rates based on DY1 costs. All of these states decreased the average rate from DY1 to DY2 with the exception of New Jersey and Oklahoma which raised rates for DY2. Oregon and Missouri did not re-base DY2 rates because they wanted to allow more time for data to accumulate to inform their decisions. All states (even those that re-based) adjusted DY2 rates for inflation using the Medicare Economic Index, a measure of inflation in the health care sector, as required by the demonstration.

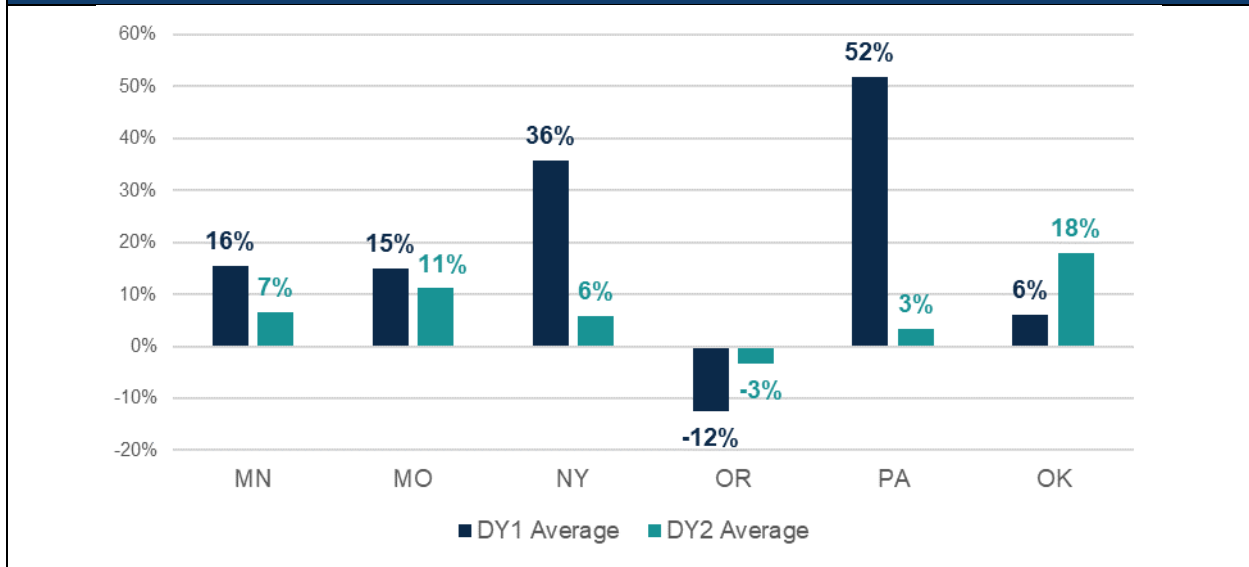
Average costs for CCBHC services. States also varied in the average daily or monthly costs of CCBHC services and in the average cost per client over the full demonstration year.

- Among PPS-1 states, the average cost per visit-day in DY1 ranged from \$188 in Pennsylvania to \$289 in Oregon. In some states, the average cost per visit-day remained relatively stable over the two years of the demonstration, whereas in other states, it increased over time. Average CCBHC cost per client (as opposed to per day) in PPS-1 states ranged from \$2,523 in New York to \$3,316 in Missouri in the first year; this average decreased from the first to the second year in two states and increased in all other PPS-1 states.
- In Oklahoma (the only PPS-2 state for which we could analyze the cost reports), the average monthly cost was \$739 in DY1 and \$754 in DY2, and average cost per client was \$4,261 in DY1 and \$5,327 in DY2.

Sufficiency of rates to cover CCBHC costs. During the first demonstration year, average CCBHC payment rates were higher than CCBHC costs in five states and lower than costs in Oregon (Figure ES.7). This meant that the amount the CCBHCs were paid exceeded the costs of the services they provided in all but one state (Oregon). However, in all states except Oklahoma, the average payment rate more closely aligned with costs in the second demonstration year. In both demonstration years, the extent to which the payment rates covered costs for an individual CCBHC varied within state; the payment rate did not cover the costs for all CCBHCs.

Impacts on Medicaid costs. As described above, the Medicaid data available for the evaluation did not include the costs of services delivered through managed care arrangements in Missouri and Pennsylvania. As a result, we were only able to conduct a representative analysis of the impact of the demonstration on Medicaid costs in Oklahoma. In this state, we found that total Medicaid costs increased significantly more for CCBHC clients than the comparison group. Over the full two-year demonstration period, the average total cost to Medicaid was \$3,229 per beneficiary per month (PBPM) for CCBHC clients compared to \$2,619 PBPM for the comparison group--a 30 percent difference. This reflected an increase from the baseline period of \$548 PBPM for CCBHC clients and a decrease of \$228 PBPM for the comparison group. The increased cost for CCBHC clients was driven by increased costs for ambulatory services, particularly CCBHC visits. Over the two years, Medicaid costs for CCBHCs increased by an average of \$784 PBPM relative to the baseline period, whereas average costs for services delivered by comparison clinics did not change from baseline through the demonstration.

Figure ES.7. Average Payment Rates as Percentage Above or Below Average Costs Per Visit-Day or Visit-Month, by State and Demonstration Year



Source: Mathematica and the RAND analysis of DY1 and DY2 CCBHC cost reports.

Notes: A positive percentage indicates how much the rate was greater than the cost and a negative percentage indicates how much the rate was less than the cost. Nevada did not submit cost reports for DY2. New Jersey submitted cost reports for both demonstration years, but the reports included projected rather than actual costs and were therefore excluded from our analysis (because they are not comparable with those of other states). Visit-month for Oklahoma. Visit-day for Minnesota, Missouri, New York, Oregon, and Pennsylvania.

The limitations of the Medicaid claims analysis described above also apply to the cost impact analyses for Oklahoma. In addition, the findings from Oklahoma are not generalizable to other states for several reasons. Oklahoma reimburses almost all Medicaid services on an FFS basis whereas in other demonstrate states the majority of Medicaid services are delivered through managed care arrangements. Oklahoma also reimbursed CCBHCs using the monthly PPS-2 model, which is more complicated than the PPS-1 model used in most other states because it includes rates for special populations and outlier payments. Oklahoma was also the only state in which adjustments to the second year payment rates resulted in CCBHCs being paid more, on average, than their costs in the second year relative to the first year. Finally, there were only three CCBHCs in Oklahoma, which served a demographically different population than other states. These characteristics of the state do not compromise the validity of the cost impact findings, but they should not be applied to other states. Complete cost data for services delivered through managed care arrangements would facilitate cost impact estimates in other states.

In sum, on average, payment rates covered the costs of CCBHC services in all but one state (Oregon). The average rates came into greater alignment with the average costs in the second year of the demonstration for all but one state (Oklahoma). The average total costs of CCBHC services per client varied widely by state. This variation is likely driven by local costs (such as salary differences) and differences across states in the use of CCBHC services. These findings can inform future cost projections for the demonstration or similar prospective payment models for community behavioral health providers. In Oklahoma, the demonstration resulted in a significant increase in total Medicaid costs for CCBHC clients relative to the comparison group, which was driven by an increase in ambulatory spending rather

than hospitalizations or ED costs. However, the findings from Oklahoma are not generalizable to other states.

E. Recommendations

The following recommendations may help guide future implementation and monitoring of the demonstration and inform the development of similar efforts that seek to expand the delivery of care in community behavioral health clinics.

Continue federal and state agency oversight and provide technical assistance to support implementation. State agencies played a critical role in helping clinics meet the certification requirements and overcome implementation challenges. In addition to certifying clinics and setting payment rates, state agencies provided technical assistance to help CCBHCs complete cost reports, enhance data systems, and navigate new billing processes. Some states also facilitated learning collaboratives to share best practices and provided CCBHCs with regular reports on their quality measure performance. Federal agencies also supported states and CCBHCs by providing guidance on the PPS models, clarifying questions about the CCBHC criteria, and monitoring the costs of services and quality of care. CCBHCs valued the support from their state and federal partners and benefited from the time to work through implementation details before moving to the PPS or launching new services. Future CCBHCs will require adequate time to hire and train staff, develop external partnerships, and enhance their data systems in order to provide the full scope of services under the PPS. CCBHCs would also benefit from technical assistance to share data with external providers, report and use quality measures for quality improvement, complete cost reports, and develop strategies to overcome staffing challenges.

Encourage states to use and expand on the mechanisms available to align CCBHC payment rates with costs and incentivize high-quality care. Over the short term, the CCBHC demonstration could increase overall Medicaid costs as clinics expand services. The demonstration was designed to provide additional resources to these clinics to meet the certification requirements and cover the costs of services. The payment mechanisms, particularly the daily PPS-1 model, could provide an incentive for clinics to maximize revenue by having more frequent visits with clients. However, the demonstration allows states to use the cost reports submitted by CCBHCs each year to adjust payment rates for the following year. If a clinic has a high number of daily visits with clients in one year, their rate for the following year could be lower than the previous year because the re-basing process would divide the total costs for the previous year by a larger number of visits. Over time, this re-basing process should align payment rates with costs and ensure that CCBHCs have predictable funding. States are not required, however, to re-base payment rates each year using this process. HHS could encourage states to use the cost reports for re-basing and continue to monitor the extent to which payment rates align with costs over time to assess if other mechanisms are necessary to control costs.

Quality measure reporting also has an important role in the context of the PPS. CCBHC payments are not linked to the provision of individual procedures and the demonstration does not require that CCBHCs track the delivery of specific services. Rather, CCBHCs are paid the same amount regardless of the specific services they provide to a client during the day (or month for PPS-2 states) in which that client receives care. Thus, there could be an incentive for CCBHCs to provide minimal services while still collecting the full daily or monthly payment. However, the quality measures help to guard against this incentive by providing information that states can use to assess whether the quality of care suffers over time. States can also use the quality measures to incentivize the delivery of better care. The demonstration required PPS-2 states to award QBPs based on quality measures whereas this was optional for PPS-1

states. All but one state implemented QBPs but it's unclear whether the measures used in those systems and the amount of QBPs incentivized better care. The QBP systems could be strengthened and refined in at least two ways:

1. ***Encourage states to expand the measures used to award QBPs.*** States were required to use a common set of measures to award QBPs and could require CCBHCs to achieve performance goals on additional measures, but few states elected to require many additional measures. In the future, states could consider using a broader set of measures to award QBPs. The measures could reflect various domains of care, including measures of care coordination and physical health care (no state included measures of physical health care in their QBP systems). Some of the measures for which CCBHCs showed the most consistent improvement (such as measures of screening and follow-up for tobacco and unhealthy alcohol use) were not among the measures that states used to award QBPs. Flexibility in the selection of measures might enable CCBHCs and states to focus on domains of quality that align with local or state quality improvement goal. States may also want to prioritize measures for the first year that have good historical data to inform performance targets and phase in other measures over time.
2. ***Use QBP systems to further incentivize care coordination and data sharing.*** Several of the measures that states used to award QBPs assess domains of care for which performance could be influenced by the strength of relationships and data sharing agreements between CCBHCs and other providers. For example, high performance on measures of follow-up care after hospitalization could be influenced by whether the CCBHC has protocols and data sharing agreements in place with hospitals to receive notification when a client in their care is discharged. However, hospitals and other providers do not share in the QBPs or otherwise receive funding as part of the demonstration (unless they are functioning as a DCO providing CCBHC services, which was rare), and therefore they do not have a direct financial incentive or additional resources to invest in partnerships with CCBHCs. In the future, states could design QBP systems that would allow other entities to share in the QBPs, but this would require federal legislative action because it is not currently permitted under the demonstration.

Maintain flexibility in the certification criteria while ensuring that CCBHCs provide a common standard of care. Although the CCBHC certification criteria provide the general framework for services and staffing and other capabilities of the clinic, states have some flexibility to align the criteria with their existing service delivery systems and the populations served by CCBHCs. This type of flexibility enabled states to tailor the CCBHC model to their local context and to make changes over time as they learned from the demonstration. As states and clinics gain more experience with the CCBHC model, there may be opportunities to refine and clarify expectations for certain CCBHC requirements to ensure that CCBHCs maintain a similar capacity to coordinate care and provide a core set of services. For example, CCBHCs had considerable flexibility to define the primary care screening and monitoring requirements, and they varied in the extent to which treatment teams included PCPs, in their information exchange with external providers, and in their performance on quality measures related to physical health care. The CCBHC criteria also requires training in primary and behavioral health care integration but does not recommend any specific training or models for integration.

Provide guidance on strategies for serving members of the armed forces and veterans. Some CCBHCs struggled to provide intensive community-based mental health services for members of the armed forces and veterans. Some state officials reported that CCBHCs were not located in communities in which many members of the armed forces or veterans sought services from community behavioral health centers, but they also reported that some CCBHCs found it challenging to engage these populations and to develop

referral relationships with agencies that specialize in serving them. It was not always clear how CCBHCs and states ensured that members of the armed forces and veterans received services consistent with the mental health guidelines promulgated by the VHA, as required in the CCBHC criteria. States and CCBHCs may benefit from further guidance on strategies for serving members of the armed forces and veterans in communities where these populations are less prevalent and on how to develop relationships with other facilities and providers that specialize in serving these populations.

Provide resources and technical assistance to develop data systems that facilitate population health management and care coordination. Enhancing EHRs and other data systems to report quality measures and capture information to coordinate care was a considerable achievement for CCBHCs that was facilitated by the demonstration funding and technical assistance from state agencies. Officials in several states cited EHRs as central facilitators of care coordination, noting, for example, that the integration of treatment plans and physical and behavioral health care records improved communication between providers. Some states and CCBHCs also added population health management functions into their EHRs to identify clients who required more intensive follow-up and care coordination (for example, developing data-driven algorithms based on client risk factors). The sophistication of these data systems, however, still varied somewhat across CCBHCs. For example, some CCBHCs had systems that captured information about physical health conditions and exchanged information with other providers, whereas others did not. This variation could affect the ability of CCBHCs to monitor health status and coordinate care. Building on their progress, CCBHCs may benefit from additional resources and technical assistance to further develop data systems that support the screening, care coordination, and population health management functions of the CCBHC model. CCBHCs and states may also benefit from technical assistance to develop specific strategies for using data to inform quality improvement activities. Several of the strategies developed by CCBHCs and states could be replicated. For example, some states provided CCBHCs with data on their performance on quality measures relative to other CCBHCs in the state. CCBHCs in some states also used their data systems to provide their staff with aggregate and client-level information on clients' health status, medication adherence, and service use.

Strengthen data to facilitate future monitoring and evaluation. As the CCBHC model matures and expands, future research should build on this evaluation to gain a deeper understanding of the factors that contribute to successful implementation and to outcomes. Some areas for future inquiry include the strength of CCBHCs' collaborations with external providers, the mechanisms CCBHCs use to share information with external providers, how CCBHCs support the new 988 suicide and crisis hotline, the extent to which CCBHCs address and impact physical health conditions, and if there are any critical gaps in the required CCBHC services. There would also be value in further assessing the impact of the model on the behavioral health care workforce and behavioral health treatment capacity of communities.

Several enhancements to data could support future monitoring and evaluation. Standardized cost reports and quality measures were critical for evaluating the demonstration. However, as noted in this report, some of the quality measure data included anomalies (for example, abnormally low denominators), and not all states submitted performance data for all measures. Periodic auditing of quality measure data could increase its value for assessing changes in the quality of care and making state-to-state comparisons. Many of the measures used in the demonstration are also used in other state and national reporting programs, which release periodic updates to the measure specifications. It will therefore be important to ensure that the specifications for the demonstration measures continue to align with measures reported in other programs to facilitate comparisons and decrease reporting burden for CCBHCs and states. In addition, most of the quality measures assessed processes of care (such as screening and follow up after

discharge from a hospital) and experiences with care; only one assessed improvement in outcomes (depression remission). Measures that assess changes in mental health symptoms, substance use, functioning, or physical health status would be valuable to assess the impacts of the CCBHC model and identify areas of quality improvement. These outcomes would likely be captured through structured fields in EHRs and/or surveys of clients--both of which would require an investment of resources to collect high-quality data--and completely standardizing data collection across clinics might not be possible.

More complete Medicaid data would also facilitate future monitoring and evaluation of the demonstration. Complete cost information for services provided through managed care arrangements would allow for an assessment of the impact of the demonstration on costs beyond Oklahoma. CCBHC claims also did not consistently provide information on the procedures or services provided during a visit (or month for PPS-2 states) because not every state required CCBHCs to provide this information with the claim to get paid. Moreover, in the PPS-2 states, CCBHCs were only required to submit one claim per month for a beneficiary seen in that month, and there was no requirement to submit additional data on the number of visits during the month. There also was no way to identify DCO services provided under the CCBHC payment using claims data. These issues limit the ability to use claims data for more detailed analyses focused on the delivery of specific services, including EBPs. However, requiring such detail on claims would eliminate the simplicity of submitting a daily or monthly claim--an appealing feature of the payment model that clinics and states reported allowed CCBHCs more flexibility to provide services without concern for specific procedure codes. States could offer some type of incentive for CCBHCs to submit claims with more details on procedures, but such an incentive would need to, at a minimum, offset the time required for more detailed coding and tracking of specific services. Other data sources, such as the quality measures or surveys described above, could provide information about the delivery of specific EBPs.

F. Conclusions

The CCBHC demonstration provides states with an opportunity to test a new strategy for delivering a common set of comprehensive services in community behavioral health clinics funded through a PPS that includes quality measure reporting. During the first two years of the demonstration, CCBHCs implemented a range of activities to improve access to care; increased the number of clients they served; expanded services to include various EBPs, crisis services, and rehabilitative services; hired and trained staff; developed partnerships with external providers; enhanced their data systems; and changed many of their care processes. Overall, the quality of care provided to CCBHC clients was comparable to available benchmarks, and performance on some measures improved over time. However, there was some room for improvement on several measures. State agencies played a critical role in supporting the demonstration. States experienced some initial challenges setting the PPS rates, but over time these rates came into greater alignment with CCBHC costs in all but one state. The introduction of the CCBHC model impacted service use differently across states, which likely reflects differences in implementation strategies and populations. More time might be needed for the demonstration to impact service use and costs. As the CCBHC model matures and expands, continued monitoring and evaluation can inform how to refine and improve the delivery of services. CCBHCs would benefit from technical assistance to help them adhere to certification requirements and overcome implementation challenges. New areas of evaluation--such as effects of the model on workforce shortages, job satisfaction and retention, and the financial health of community-based behavioral health organizations--may reveal important additional benefits of the model.

I. INTRODUCTION

In the United States, only 45 percent of adults with any mental health condition and 10 percent of adults with any substance use disorder (SUD) received treatment in 2019 (SAMHSA 2020a). Opioids and other substances continue to devastate communities and recent data indicate an increase in drug overdose deaths (CDC 2021). Individuals with behavioral health (BH) conditions also continue to experience premature mortality due to suicide and untreated comorbid physical health (PH) conditions including diabetes and cardiovascular diseases (Roberts et al. 2017).

Effective evidence-based treatments for mental health conditions and SUDs are unavailable or difficult to access in many communities (Blyler et al. 2021). Pervasive behavioral health workforce shortages create long wait-times for appointments, and in some areas, emergency departments (EDs) and the criminal justice system are the only sources of care for people in crisis (Cama et al. 2017; Nordstrom et al. 2019; Bradley et al. 2020; SAMHSA 2021). Even when services are available, behavioral health providers often do not have the resources, staff, or data systems to monitor chronic conditions and coordinate care with external health and social service providers (Kilbourne et al. 2018; Pincus et al. 2016).

Community mental health centers (CMHCs) play an essential role in delivering ambulatory behavioral health care. Historically, the Federal Government has maintained a narrow definition of CMHCs (pertaining only to providers who participate in Medicare; CMS n.d.), but states and localities use the term more broadly to refer to ambulatory care facilities that specialize in the delivery of behavioral health care. Following the repeal of the Mental Health Systems Act and introduction of block grants in the 1980s, states were largely responsible for determining what services to provide through CMHCs and how to integrate them into systems of care (NASMHPD Research Institute 2007). Today, there are approximately 2,682 state-licensed or certified CMHCs across the nation and an additional 5,220 specialty outpatient mental health clinics (SAMHSA 2020b). CMHCs generally serve individuals with serious mental illness (SMI) and sometimes people with less severe or chronic disorders; not all serve children and/or adolescents or provide family-based services. Most of these CMHCs serve Medicaid beneficiaries or individuals enrolled in other public insurance and they often function as safety net providers for the uninsured. However, they tend to be under-resourced and vary in the services they offer. For example, depending on the state, between one-half to three-quarters of CMHCs provide SUD treatment (Wishon et al. 2021). Only 23 percent of CMHCs provide integrated primary care services but this ranges from no CMHCs in some states to over 50 percent of CMHCs in other states (Brown 2019).

Over the past several decades, Medicaid has become an increasingly important source of funding for CMHCs and behavioral health care more generally as funding has shifted toward community-based services and away from more restrictive institutional settings (Medicaid and CHIP Payment and Access Commission 2015). Federal block grants continue to provide states and CMHCs with funding for treatment, but such funds now account for a smaller proportion of care than in the past (Schiff et al. 2015). States and providers report that CMHCs often encounter considerable financial hardship. Economic pressures have forced many states to make significant reductions to their mental health care budgets and even eliminate services (Aron-Dine et al. 2020; Schiff et al. 2015). In states that did not expand Medicaid eligibility, many individuals with mental health and SUDs remain uninsured, and CMHCs struggle to cover the costs of uncompensated care (Dey et al. 2016). Even for clients with Medicaid or other types of insurance, reimbursement rates for providers often does not fully cover comprehensive care and high-quality case management (Scharf et al. 2015). CMHCs turn to a patchwork of federal and state funds and philanthropy to supplement the cost of care for Medicaid beneficiaries and

the uninsured. Finally, CMHCs face growing pressure to provide an increasingly broad array of mental health, substance use, and primary care services for individuals with comorbid conditions.

A. Goals of the Certified Community Behavioral Health Clinic Demonstration

Section 223 of the Protecting Access to Medicare Act (PAMA), enacted in April 2014, authorized the CCBHC demonstration to allow states to test a new strategy for delivering and reimbursing services provided in CMHCs and other community behavioral health clinics. The demonstration, initially authorized for two years, aims to improve the availability, quality, and outcomes of ambulatory services provided in community behavioral health clinics by establishing a standard definition for CCBHCs and developing a new Medicaid prospective payment system (PPS) in each state that accounts for the expected cost of providing comprehensive services to all individuals who seek care, regardless of their ability to pay, including but not limited to those with SMI, serious emotional disturbance (SED), and SUDs. The demonstration also aims to provide coordinated care that addresses both behavioral and physical health conditions.

CCBHCs must offer nine types of services including: (1) crisis mental health services; (2) screening, assessment, and diagnosis; (3) patient-centered treatment planning; (4) outpatient mental health and substance use services; (5) outpatient clinic primary care screening and monitoring; (6) targeted case management (TCM); (7) psychiatric rehabilitation services; (8) peer support, counselor services, and family supports; and (9) intensive, community-based mental health care for members of the armed forces and veterans (SAMHSA 2016a). However, states have some flexibility to tailor these services to align with their state Medicaid Plans and other state regulations, and to meet the needs of communities. Services must be person- and family-centered, trauma-informed, and recovery-oriented. In addition, CCBHCs are required to expand service hours, provide services beyond the walls of the clinic (for example, in clients' homes and elsewhere in the community), and maintain partnerships with a range of health and social service providers to facilitate referrals and care coordination (SAMHSA 2016a). CCBHCs can partner with Designated Collaborating Organizations (DCOs) to provide some of the required services. DCOs are entities that are not directly supervised by a CCBHC but have a formal relationship with a CCBHC to provide specified services. CCBHCs that engage DCOs maintain clinical responsibility for services the DCO provides to CCBHC clients.

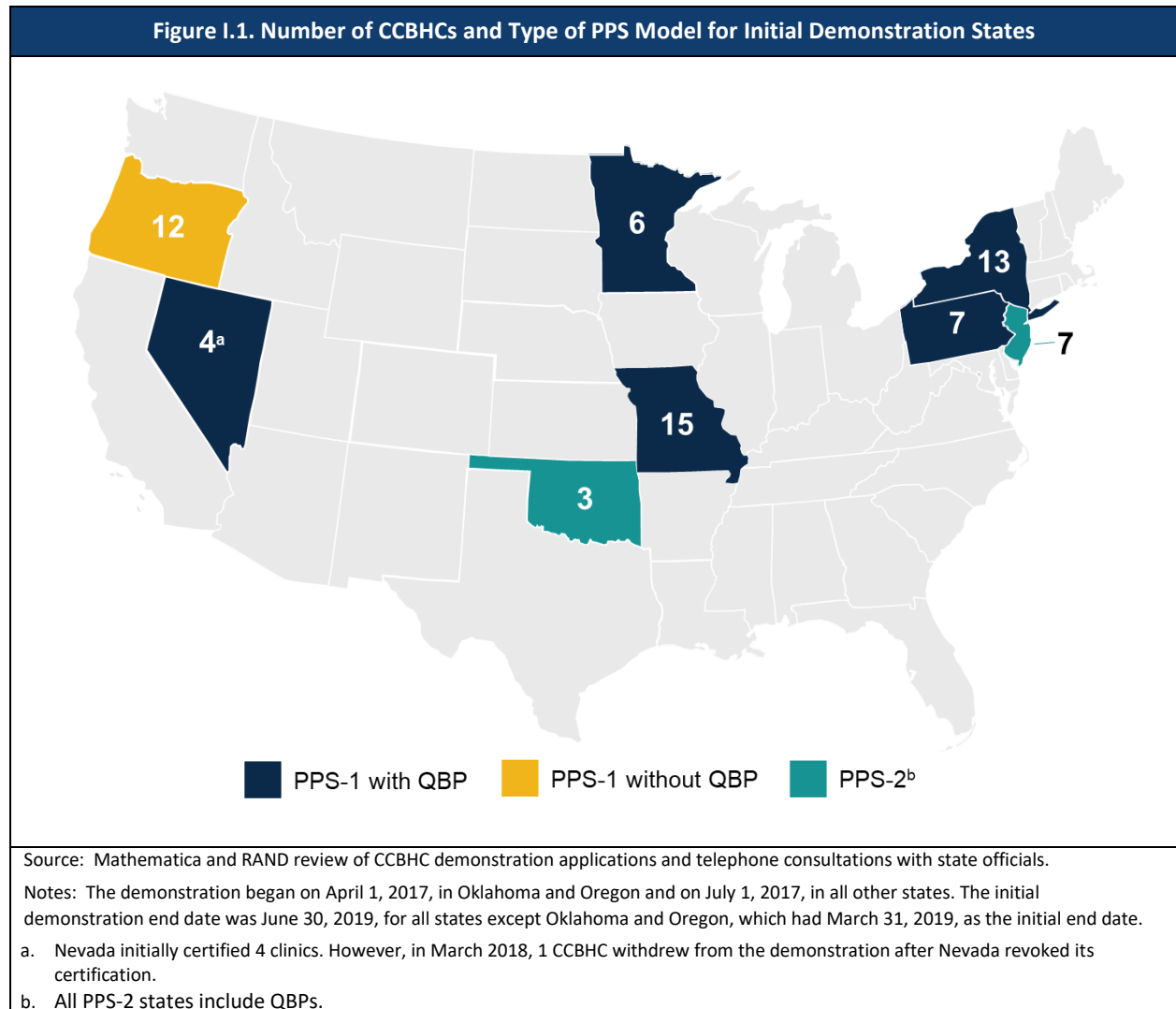
The PPS in each state is designed to provide CCBHCs with the financial support and stability necessary to deliver these required services. States participating in the demonstration select one of the following PPS models to reimburse all CCBHCs in the state: a fixed daily payment (PPS-1) for each day a Medicaid beneficiary receives demonstration services or a fixed monthly payment (PPS-2) for each month in which a Medicaid beneficiary receives demonstration services. States set the payment rates, which can vary across CCBHCs within a state. PPS-1 states have the option to provide CCBHCs with quality bonus payments (QBPs) based on their performance on quality measures. PPS-2 states are required to provide QBPs based on quality measures.

States and CCBHCs are required to report 21 quality measures following each demonstration year (DY). These are calculated from Medicaid claims and managed care encounter data, electronic health records (EHRs), and surveys of CCBHC clients and their family members. These measures assess best practices in care delivery (for example, timely follow-up after discharge from a hospital), outcomes (for example, improvement in depression symptoms), and client and family member experiences with care. Quality measure reporting provides CCBHCs and state officials with standardized metrics to monitor the quality of care, inform quality improvement efforts, and award QBPs. CCBHCs also submit standardized cost

reports to the state following each year of the demonstration. The cost reports include information on clinic operating costs and the number of daily (for PPS-1 states) or monthly (for PPS-2 states) visits to the clinic in each demonstration year.

B. Certified Community Behavioral Health Clinic Demonstration Roll Out

In October 2015, the U.S. Department of Health and Human Services (HHS) awarded planning grants to 24 states to begin certifying clinics to become CCBHCs, establish their PPS, and develop the necessary infrastructure to support the demonstration. To support the first phase of the demonstration, HHS developed criteria (as required by PAMA) for certifying CCBHCs in six areas: (1) staffing; (2) availability and accessibility of services; (3) care coordination; (4) scope of services; (5) quality and reporting; and (6) organizational authority (SAMHSA 2016a). The criteria provide a framework for the certification of CCBHCs. However, states could exercise some discretion in applying the criteria to support implementation of the CCBHC model in different state and local contexts.



In December 2016, HHS selected eight of the 24 planning grant states to participate in the demonstration (Figure I.1), based on the ability of their CCBHCs to: (1) provide the complete scope of services described in the certification criteria; and (2) improve the availability of, access to, and engagement of clients with a range of services. Six states selected the PPS-1 model and two selected the PPS-2 model. In August 2020, HHS announced that Kentucky and Michigan would begin participating in the demonstration as a result of expansion of the demonstration by the Coronavirus Aid, Relief, and Economic Security (CARES) Act. However, information about the expected number of clinics and implementation plans for the demonstrations in Kentucky and Michigan was not available for this report. The HHS Substance Abuse and Mental Health Services Administration (SAMHSA) also provides grant support to clinics to implement the CCBHC model through the CCBHC Expansion (CCBHC-E) grant program. CCBHC-E grantees must attest to meeting the same criteria as CCBHCs participating in the demonstration, but the grant does not require states to certify clinics or alter Medicaid reimbursement for the clinics.

Among the initial eight demonstration states, the number of CCBHCs participating in the demonstration and the characteristics of the counties served by those CCBHCs varies across states (Table I.1). For example, Missouri is implementing the CCBHC demonstration in 15 clinics that serve 78 percent of the counties in the state. In contrast, Nevada is implementing the demonstration in three clinics that serve 18 percent of the counties in the state. Depending on the state, 8-27 percent of CCBHC clients were children or adolescents, 3-22 percent of clients were African American, and 5-41 percent were Hispanic during the first two years of the demonstration. CCBHC clients enrolled in Medicaid only (excluding clients dully enrolled in Medicaid and Medicare) accounted for between 41 percent of clients in Oklahoma to 66 percent of clients in Nevada. Clients who were dually enrolled in Medicaid and Medicare accounted for between 1 percent of CCBHC clients in Nevada to 12 percent of CCBHC clients in Pennsylvania. Finally, those without any insurance accounted for between 3 percent of CCBHC clients in Pennsylvania to 36 percent of CCBHC clients in Oklahoma.

Table I.1. Characteristics of CCBHC Counties and Clients

State (number of CCBHCs)	Number of CCBHCs that serve Rural or Frontier Counties	Percent of all Counties in State served by CCBHCs	Percent of Clients Under Age 18	Percent African American Clients	Percent American Indian and Alaskan Native Clients	Percent Hispanic Clients	Percent Medicaid Only Clients	Percent Dually Enrolled in Medicaid and Medicare	Percent Uninsured Clients
MN (6)	3	21%	27%	12%	2%	5%	53%	5%	5%
MO (15)	11	78%	24%	10%	1%	5%	46%	10%	18%
NJ (7)	1	29%	19%	15%	<1%	17%	52%	7%	5%
NV (4)	2	18%	8%	21%	1%	32%	66%	1%	17%
NY (13)	7	65%	22%	21%	1%	17%	62%	7%	4%
OK (3)	2	22%	25%	13%	8%	41%	41%	9%	36%
OR (12)	8	33%	24%	3%	2%	8%	62%	4%	14%
PA (7)	3	10%	20%	22%	<1%	9%	61%	12%	3%

Source: DY1 CCBHC Quality Measure Reports for client demographic characteristics. SAMHSA 2017 Certified Community Behavioral Health Clinic Demonstration Program, Report to Congress 2017 for county information.

Notes: States did not report the demographic characteristics of clients served by CMHCs or other community behavioral health clinics to facilitate direct comparisons with CCBHC clients. The demographic characteristics of CCBHC clients were generally similar in the first and second demonstration years.

Across seven of the eight initial demonstration states, CCBHCs served 304,988 clients in the first demonstration year (DY1) and 332,135 clients in the second demonstration year (DY2), representing a 9 percent aggregate increase across CCBHCs (Table I.2). Nevada did not report the number of CCBHC clients). Growth in the number of CCBHC clients over the first two years of the demonstration ranged from 1 percent in Oregon to 23 percent in Pennsylvania. Missouri had the most CCBHCs of any state and served the largest number of clients in each demonstration year.

Table I.2. Number of Clients Served by CCBHCs in Each Demonstration Year				
State (number of CCBHCs)	Total Clients in DY1	Total Clients in DY2	Increase in Clients from DY1 to DY2	Percent Increase in Clients from DY1 to DY2
Aggregate	304,998	332,135	27,140	9%
MN (6)	23,027	25,402	2,375	10%
MO (15)	121,787	132,562	10,778	9%
NJ (7)	17,851	19,127	1,276	7%
NY (13)	49,903	55,693	5,790	12%
OK (3)	20,610	22,741	2,131	10%
OR (12)	52,911	53,301	390	1%
PA (7)	18,909	23,309	4,400	23%

Source: DY1 and DY2 CCBHC Quality Measure Reports.
 Note: Nevada did not submit the number of CCBHC clients.

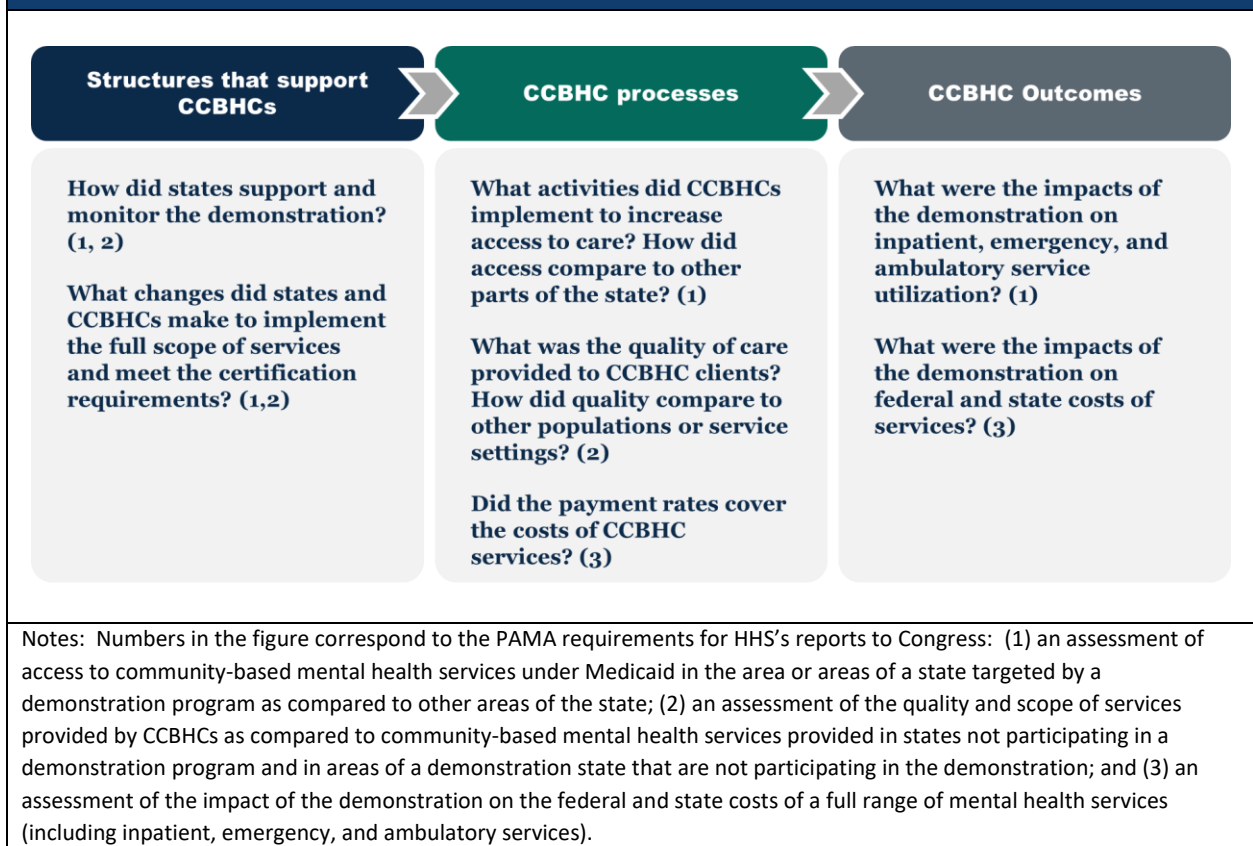
C. Evaluation of the Certified Community Behavioral Health Clinic Demonstration

Section 223 of PAMA mandates that HHS submit reports to Congress that include: (1) an assessment of access to community-based mental health services under Medicaid in the area or areas of a state targeted by a demonstration program as compared to other areas of the state; (2) an assessment of the quality and scope of services provided by CCBHCs as compared to community-based mental health services provided in states not participating in a demonstration program and in areas of a demonstration state that are not participating in the demonstration; and (3) an assessment of the impact of the demonstration on the federal and state costs of a full range of mental health services (including inpatient (IP), emergency, and ambulatory services).

In September 2016, the HHS Office of the Assistant Secretary for Planning and Evaluation (ASPE) contracted with Mathematica and its subcontractor, the RAND Corporation, to evaluate the implementation and impacts of the demonstration and provide information for HHS’s reports to Congress. The evaluation included the eight original demonstration states and covers the two-year period for which the demonstration was initially authorized.

The evaluation was designed to answer several overarching questions that align with the PAMA requirements for HHS’s reports to Congress (Figure I.2). We grouped these evaluation questions to examine the structures and processes that states and CCBHCs put into place to implement the scope of services and improve access to care, the quality of care delivered to CCBHC clients, the costs of CCBHC services, and changes in Medicaid service use and costs that may have resulted from the demonstration. We developed more detailed evaluation questions linked to each of these overarching questions (see Chapter II).

Figure I.2. Overarching CCBHC Evaluation Questions



The evaluation included interviews with state officials and consumer and family representatives at different stages of the demonstration to assess implementation over time; site visits to selected CCBHCs to interview clinic administrators and frontline clinical staff to understand their experiences implementing the model; analysis of progress reports that CCBHCs submitted in each demonstration year to report their staffing, training activities, accessibility of services, scope of services, EHR/health information technology (HIT) capabilities, care coordination activities, and relationships with other providers; and analysis of the cost reports and quality measures that states and CCBHCs submitted following each demonstration year.

The evaluation also assessed changes in Medicaid service use (including ambulatory visits, ED visits, and hospitalizations) and costs among beneficiaries who received care from CCBHCs relative to beneficiaries with similar demographic and diagnostic characteristics who received care from other (non-certified) community behavioral health clinics in the same state, representing care as usual. Although changes in service use do not necessarily reflect changes in access to care or the quality of care, the findings from these analyses are important to understand how the CCBHC model affects the broader health care system. Hospitalizations and ED visits are typically viewed as unfavorable outcomes from a health system perspective. CCBHCs' efforts to increase access to care and deliver new services could potentially result in the identification of untreated conditions and increase the use of services. Conversely, providing more comprehensive ambulatory care to CCBHC clients could decrease use the ED and lower hospitalization rates.

We compared pre-post changes in service use and costs for the treatment group (beneficiaries who received services from clinics that became CCBHCs in the year prior to the demonstration) with pre-post changes in service use and costs for a comparison group (beneficiaries who received services from clinics that did not become CCBHCs in the year prior to the demonstration) within the same state. This study design (commonly referred to as a difference-in-differences design) allowed us to identify changes in service use and costs attributable to the demonstration, as opposed to general historical trends. This component of the evaluation included only beneficiaries enrolled in Medicaid in the year prior to the demonstration. Due to data or study design limitations in some states, this component of the evaluation was limited to three states: Oklahoma, Pennsylvania, and Missouri. These states provided Medicaid claims and managed care encounter data for the evaluation. We also consulted with officials and data experts in these states to define the comparison group in each state. Most Medicaid services in Pennsylvania and Missouri are delivered through managed care arrangements and the costs for these services were not captured in the Medicaid data available for the evaluation. As a result, analyses of the impact of the demonstration on Medicaid costs were limited to Oklahoma, which provides nearly all Medicaid services on a fee-for-service (FFS) basis.

D. Purpose and Organization of the Report

This final report summarizes findings from the first two years of the CCBHC demonstration. These findings build on our previous evaluation reports (Breslau et al. 2020a, 2020b; Wishon Siegarth et al. 2019). In Chapter II of the report, we describe the data sources and methods used to address each evaluation question. In Chapters III through VI, we summarize the findings. In Chapter VII, we present conclusions organized by the PAMA requirements and offer recommendations.

II. DATA SOURCES AND METHODS

As noted, PAMA requires HHS to submit annual reports to Congress that include an assessment of: (1) access to community-based mental health services; (2) quality and scope of services provided by CCBHCs; and (3) the impact of the demonstration on federal and state costs. The evaluation was designed to provide information for these reports to Congress and to help policymakers and behavioral health system stakeholders understand the implementation and outcomes of the CCBHC model. This chapter describes the evaluation questions, data sources, and analytic methods.

A. Evaluation Questions

The evaluation was designed to answer several overarching questions that align with PAMA’s requirements. Building on the overarching evaluation questions, we developed more detailed questions to address each of the PAMA requirements. Table II.1. shows the detailed questions, as well as the data sources used to address each of these questions, including: (1) demonstration applications and state documents; (2) three rounds of telephone interviews with state Medicaid and behavioral health officials; (3) CCBHC progress reports collected in spring 2018 and 2019; (4) site visits to CCBHCs in four states; (5) cost reports that CCBHCs submitted to the HHS Centers for Medicare & Medicaid Services (CMS); (6) CCBHC performance on quality measures submitted to HHS; and (7) Medicaid claims and encounter data from three demonstration states.








Table II.1. Evaluation Questions and Data Sources						
Evaluation Questions	Interviews with State Officials and Consumer and Family Representatives	Site Visits	Clinic Progress Reports	Cost Reports	Quality Measures	Medicaid Claims and Managed Care Encounters
Access to care						
What steps did CCBHCs take to increase access to care?	✓	✓	✓			
Did CCBHCs implement new client outreach strategies?	✓	✓	✓			
Did CCBHCs establish relationships with DCOs and/or other providers?	✓	✓	✓			
What types of care management and coordination did CCBHCs and DCOs offer?	✓	✓	✓			
What processes did CCBHCs and DCOs implement to share information across providers and coordinate care?	✓	✓	✓			
Did the number of clients served by CCBHCs served change from DY1 to DY2?					✓	
Did consumer and/or family organizations perceive improvements in the access to care?	✓					
Did the introduction of the CCBHC model impact hospitalization rates, ED visits, and ambulatory care visits for CCBHC clients relative to within-state comparison groups?						✓

Table II.1. (continued)						
Evaluation Questions	Interviews with State Officials and Consumer and Family Representatives	Site Visits	Clinic Progress Reports	Cost Reports	Quality Measures	Medicaid Claims and Managed Care Encounters
Scope of services						
Which services did CCBHCs add to meet the certification requirements?	✓	✓	✓			
Did CCBHCs maintain the required services throughout the demonstration?	✓	✓	✓			
Which EBPs were implemented as a result of the demonstration?	✓	✓	✓			
What types of staff did CCBHCs hire to meet certification requirements? Did CCBHCs experience difficulty in maintaining required staffing?	✓	✓	✓			
What training did CCBHC staff receive?	✓	✓	✓			
Quality of care						
What was the quality of care provided to CCBHC clients? Did quality of care change from DY1 to DY2?					✓	
How did CCBHCs and states use performance results on the quality measures to improve care?	✓	✓				
How did states structure their QBP systems? Which measures and measure threshold did they use to award QBP payments?	✓					
How many CCBHCs received QBP payments?	✓					
What support have CCBHCs needed for EHR/HIT systems to report quality measures and coordinate care?	✓					
Impacts on costs						
What were the costs during each year of the demonstration? Did the payment rates cover the cost of CCBHC services?				✓		
Did states change CCBHC payment rates based on the first-year costs?	✓					
Did the introduction of the CCBHC model impact total cost of care for CCBHC clients relative to a within-state comparison group?						✓

B. Data Sources

As shown in Figure II.1, the data sources used cover multiple periods of time, before and during the demonstration. Below we describe each data source and the analytic methods used to answer the evaluation questions.

FIGURE II.1. Time Periods Covered by Data Sources

Evaluation Data Sources	Pre-Demonstration	DY1	Demonstration Midpoint	DY2
 Demonstration applications	✓			
 Telephone interviews with state officials and consumer and family organizations	✓	✓	✓	✓
 Site visits to select CCBHCs				✓
 CCBHC progress reports		✓		✓
 CCBHC cost reports		✓		✓
 State and CCBHC-reported quality measures		✓		✓
 Medicaid claims	✓	✓	✓	✓

1. Demonstration applications and materials

Early in the evaluation, we reviewed states’ CCBHC planning grant and demonstration applications and additional materials—including state Medicaid plans, state substance abuse and mental health block grant applications, and state websites. We systematically abstracted information from these sources to develop state profiles summarizing the characteristics of state delivery systems and CCBHCs at the beginning of the demonstration and their plans for demonstration implementation. We also consulted briefly with each state early in the evaluation to clarify our understanding of their plans. We used the information abstracted from state materials to solidify our evaluation plans, prepare for interviews with state officials and stakeholders, and help understand the context in which the demonstration was implemented in each state.

2. Interviews with state Medicaid and behavioral health officials and consumer and family member representatives

State officials. We conducted three rounds of semi-structured telephone interviews with state behavioral health and Medicaid officials responsible for the implementation of the demonstration in each state. We conducted the first round of interviews early in the first demonstration year (September and October 2017). We conducted the second round at about the mid-point of the demonstration depending on the state (February to March 2018) and the third round toward the end of the original two-year demonstration (February to April 2019). The first round of interviews gathered information about early implementation, decisions made during the demonstration planning phase, early successes and challenges in fulfilling the certification requirements and following the data collection and monitoring procedures, and projected challenges or barriers to successful implementation. The second round of interviews gathered information on interim successes and challenges, successes in implementing demonstration cost-reporting procedures and quality measures, and early experiences with the PPS. The third round of interviews collected information on implementation successes and challenges in the second demonstration year.

Two researchers conducted each interview, with one leading the interview and one taking notes. We asked interviewees’ permission to audio-record the discussions for purposes of confirming the accuracy and completeness of interview notes. Each interview was approximately 90 minutes. Some states decided to conduct joint interviews with the Medicaid and behavioral health officials whereas others conducted separate interviews. In total, we conducted 29 interviews with state officials (ten interviews in each of the

first two rounds and nine during the third). We summarized interviewees' responses about implementation experiences within each domain of the certification criteria (that is, staffing, access to care, scope of services, and care coordination) separately for each state and then identified cross-state themes in the findings.

State officials in seven of the eight demonstration states also provided information on the DY1 and DY2 PPS rate paid to each clinic (we did not receive DY2 rates for Nevada). For PPS-1 states, we received information on the daily amounts paid to each CCBHC. For the PPS-2 states, we received information on the standard monthly rates for each CCBHC, the rates for special populations, and the state-specified clinical conditions used to define those special populations. State officials also provided information on their QBP systems, including the criteria used to determine eligibility for a payment, the number of CCBHCs that met the quality performance thresholds, the amount of any payments made to clinics, and the source of the funds used for the payments.

Consumer and family-member perspectives. In the third round of interviews, we also conducted interviews with consumer and family representative organizations in four states in order to gather the perspective of consumers and families on the demonstration. In the narrative portion of their demonstration applications, each state described the stakeholder organizations that the state expected to involve in demonstration planning and implementation through steering committees, oversight counsels, and other advisory bodies. Using demonstration applications, we identified the stakeholder organizations in each state that represent the consumer and family perspective (such as those operated by people in recovery or families of those in recovery). We then consulted with state demonstration leadership to confirm which organizations played the most active role in demonstration implementation. In consultation with ASPE, we selected four organizations (each in a different demonstration state) to participate in interviews. In three states, one representative from each organization participated in the interview; in one state, three representatives from the same organization participated in a group interview.

3. Progress reports

In spring 2018 (DY1), clinics submitted an online progress report that included information about their staffing, training, accessibility of services, scope of services, EHR/HIT capabilities, care coordination activities, and relationships with other providers. Clinics submitted a second progress report in spring 2019 to report on DY2 activities. Questions in the DY2 progress report were almost identical to those in the DY1 progress report, with a few minor changes to streamline data collection for clinics and update the timeframes referenced by the questions. In collaboration with the CCBHC demonstration program leadership in each state, we conducted extensive outreach to clinic leaders via telephone and email before and during collection of the progress reports to encourage clinics' participation and answer any questions. In 2018, all 67 participating clinics completed the progress report. In 2019, the remaining 66 clinics completed the report. At both time-points, all participating CCBHCs completed the progress reports--a 100 percent response rate.² Unless otherwise noted, the 2018 and 2019 findings in this report are based on the number of clinics participating in the demonstration at the time of data collection each year (67 CCBHCs in 2018 and 66 CCBHCs in 2019, respectively). We computed descriptive statistics (for example, means and percentages) by using Excel and SAS to analyze the clinic progress report data. We summarize findings across all clinics and, in some cases, within each state.³ The information in the

² Nevada initially certified four clinics. In March 2018, shortly after we collected the first round of progress reports, this CCBHC withdrew from the demonstration after Nevada revoked its certification.

³ Detailed state-level findings are available in previous evaluation reports (Wishon Siegwarth et al. 2019).

progress reports reflect the status of implementation at the point-in-time when clinics completed the reports. CCBHCs may have continued to make changes and implement new programs and procedures since completion of the progress reports.

4. Site visits

We conducted site visits to two clinics in each of four demonstration states in February and March 2019. The site visits provided an opportunity to have in-depth discussions with clinic administrators and front-line clinical staff about how care changed as a result of the demonstration. The discussions addressed access to care at CCBHCs, any challenges associated with meeting and maintaining the CCBHC certification criteria, and operational and other changes to the clinic resulting from CCBHC certification. In collaboration with ASPE, we selected the four states to visit: Missouri, Oklahoma, Oregon, and Pennsylvania. We selected these states based on their geographic diversity, use of different PPS options (that is, PPS-1, PPS-1 with QBP, and PPS-2), and because we intended to include these states in the impact analysis using Medicaid claims data. Using information from clinic responses to the progress report and interview transcripts, we selected two clinics within each state to visit that varied in terms of the following characteristics: urban-rural designation, location and proximity to other CCBHCs, size and number of CCBHC service locations, implementation of intensive team-based supports, Assertive Community Treatment, medication-assisted treatment (MAT), and any innovative engagement strategies or mobile/community-based supports that clinics' reported in their progress reports or that we learned about during interviews with state officials. During the site visits, we conducted in-depth discussions with clinic administrators and frontline clinical staff about how care has changed following implementation of the demonstration. Interview topics included successes and barriers related to CCBHC staffing, steps clinics have taken to improve access to care and expand their scope of services, CCBHCs' experience with payments and the PPS, and quality reporting practices. We asked permission from interviewees to audio-record the discussions to facilitate our analysis. Following the interviews, we organized the interview information into categories defined by the CCBHC certification criteria to facilitate analysis, conducted thematic analysis of this data, and then synthesized the findings into the relevant areas of evaluation reports.

5. Cost reports

We obtained data on CCBHC costs during DY1 and DY2 from standardized cost reports that states submitted to CMS as part of the demonstration. We received complete DY1 and DY2 cost reports for 56 CCBHCs for this analysis. We reviewed the cost reports and communicated with state officials to obtain clarifying information as needed.

The cost reports include information on clinic operating costs and the total number of clinic visit-days (PPS-1) or visit-months (PPS-2) that occurred during the DY. Visit-days are unique days on which a client received at least one service, and visit-months are months in which a client received at least one service. The reports include all visit-days or months for all clients, not only those covered under Medicaid or the PPS. The operating costs include both direct costs, such as labor and medical supplies, and indirect costs, such as rent payments. Many clinics reported anticipated costs in their DY1 cost reports, but very few reported anticipated costs in their DY2 cost reports. Anticipated costs included projected changes that clinics expected to occur in the upcoming year, such as costs of hiring new staff. During both years of our analysis, anticipated costs were excluded from our cost calculation, because we sought to calculate actual costs. To the extent that they were included in rate-setting, anticipated costs are reflected only in the rates paid to clinics. Our previous analyses examined CCBHCs' costs versus payment rates in each year of the

demonstration, the allocation of those costs, and the distribution of costs across labor categories (Breslau 2020a, 2020b). The methods for these analyses are summarized below:

DY1 and DY2 costs. We examined CCBHCs' costs in each year of the demonstration and compared costs over time. To compare costs across demonstration years, we applied the Medicare Economic Index (MEI) to the cost data to adjust for inflation over time. For the comparisons over time in this report, we inflated costs reported in DY1 and DY2 to constant 2020. To describe change from DY1 to DY2 in CCBHC costs, we examined the change in the total costs of clinic operations, the total number of visit-days or visit-months, and the per visit-day or visit-month costs.

- Total clinic cost is the amount that clinics reported spending during each year of the demonstration.
- Total clinic visit-days is the total number of patient visit-days for PPS-1 clinics, and total visit-months is total number of patient visit-months in PPS-2 clinics, as reported in the cost reports. Total visit-days or visit-months could change from DY1 to DY2 if the CCBHCs experience a change in the number of patients or in these patients' average visit-day or visit-month frequency.
- Per visit-day or visit-month costs were calculated by dividing the total costs by the number of visit-days or visit-months. Per visit-day or visit-month costs might change if there were changes in either the total costs or the number of visit-days or visit-months. For instance, if total costs increased while the number of visit-days or visit-months remained the same, the per visit-day or per visit-month costs would increase.

Change in costs versus rates. We examined how the PPS rates changed from DY1 to DY2 and calculated the difference between those rates and the per visit-day or visit-month costs described above. We compared the percentages by which the rates differ from the costs across the two demonstration years to understand whether the payment rates and costs came into greater alignment as some states re-based their DY2 payment rates. To conduct this analysis for PPS-1 states, we used each clinic's rate in each demonstration year. Because states that use the PPS-2 model assign clinics a standardized rate and special population rates that differ across clinics, we calculated a 'blended rate' for each clinic, which is an average across the payment categories weighted by the distribution of clients across the categories as reported in the cost reports. Chapter V includes further details about this calculation.

6. Quality measures

SAMHSA provided states and CCBHCs with the technical specifications and a standard reporting template for the required demonstration quality measures (SAMHSA 2016b). We obtained the quality measure data from HHS. This report includes analysis of the 21 required quality measures from 62 CCBHCs that had complete data. CCBHCs in Nevada were excluded from the analysis because they state submitted five measures in DY1 but no measures for DY2.

Before analyzing the quality measures, we examined the comparability and completeness of the data across clinics and states. We reviewed information that clinics provided about modifications that they made to the measure specifications. As described in Chapter IV, we excluded some CCBHCs or states from the analysis of a specific measure if their modification to the measure specification compromised comparability with other CCBHCs or states. When the reported modifications were minor (for example, some data for the measure were captured in an EHR and others were obtained from paper medical records, but the clinic did not deviate from the measure specification), we included the data in the analysis. When necessary, we communicated with state officials to clarify the reported deviations from the measure specifications or gather additional information about the measure reporting process. We also

established a minimum denominator size threshold to report state-wide performance on a measure, which required at least 30 consumers in the denominator across all CCBHCs in the state. Given that some clinics had a small number of consumers in the denominator for several of the measures, we aggregated measure performance to the state level. We also drew on any available published literature and publicly available performance data to contextualize performance on the measures. For example, for certain measures we gathered and reported benchmark data on measure performance from the Annual Reporting on the Quality of Care for Adults in Medicaid (FFY 2018 for DY1 and FFY 2019 for DY2) to provide context for interpreting CCBHC performance (CMS 2019b); however, these benchmark data were available for some but not all measures and states.

7. CMS-64 reports

State Medicaid agencies use Form CMS-64 to report a summary of quarterly Medicaid and Children's Health Insurance Program (CHIP) expenditures for which states are entitled to federal reimbursement under Title XIX of the Social Security Act. States report quarterly expenditures using various source documents such as invoices, cost reports, and eligibility records. Form CMS-64 collects information about the total computable expenditures and the state share of those expenditures. Prior to the demonstration, CMS updated Form CMS-64 to capture CCBHC demonstration expenditures. We divided the expenditures reported on Form CMS-64 by the number of CCBHC clients enrolled in Medicaid using information that CCBHCs reported with their quality measures to calculate the average Medicaid expenditure per beneficiary. While these data cannot be used to measure the impact of the program on costs, they provide information on cost variations across states that can inform future cost projections for the CCBHC model.

8. Medicaid claims and encounter data

The impact study assessed changes in service use patterns and costs of care among Medicaid beneficiaries who received CCBHC services compared to Medicaid beneficiaries with similar demographic and diagnostic characteristics who did not receive CCBHC services during the demonstration. Given the data limitations in some of the demonstration states (particularly the lack of complete or reliable managed care encounters or viable comparison groups), we decided in collaboration with ASPE, CMS, and SAMHSA to limit the impact analyses to four states that had the strongest data and comparison groups: Missouri, Oklahoma, Oregon, and Pennsylvania. These states are diverse in terms of their PPS models and other state and clinic-level characteristics. As described below, we ultimately omitted Oregon due to unexpected data limitations.

We used FFS Medicaid claims and managed care encounters (which included all CCBHC services and PPS claims) to examine changes in inpatient, ambulatory, and ED service use for both physical and behavioral health conditions. We also examined changes in Medicaid costs for Oklahoma, the only state among the three included in the impact analyses that had complete provider payment amounts to facilitate a representative cost analysis. The analyses used four years of Medicaid data: a two-year baseline period from 2015 through 2017 and a two-year demonstration period from 2017 through 2019 (the start and end months varied by state corresponding to their demonstration start dates).⁴

We used a longitudinal difference-in-differences model, a robust method for estimating causal effects (Howell 2015). Using this design, we selected only beneficiaries enrolled in Medicaid during both the baseline and demonstration periods and tracked their service use and costs over time. Our findings,

⁴ Demonstration services began on April 1, 2017, in Oklahoma and on July 1, 2017, in Missouri and Pennsylvania.

therefore, reflect the impact becoming a CCBHC has on service use among the clinics' existing clients. The impact estimates measure the change in outcomes among the treatment group (clients who received care from clinics that became CCBHCs) before and after the CCBHC demonstration began relative to the changes in outcomes among a weighted (or matched) comparison group (clients who received care from clinics that did not become CCBHCs) over the same timeframe. By holding the population fixed, the longitudinal design guards against misattributing impacts to any underlying changes in CCBHC case-mix (that is, changes in the characteristics of the populations served by CCBHCs over time) and maximizes detecting impacts among the populations that were historically served in these settings before the demonstration began. A key assumption of this study design is that the change in outcomes observed among those in the comparison group is what would have been observed in the treatment group in the absence of the CCBHC demonstration. It is possible that the findings could differ if the impact analyses used a repeated cross-sectional design that did not require continuous enrollment of beneficiaries in Medicaid.

Given that Medicaid benefits and other state-related contextual factors could influence impact estimates, we identified within-state comparison groups and conducted the difference-in-differences analyses separately for each state. That is, we conducted separate impact estimates for each state and then looked across the states to identify any patterns in the findings (for example, if all three states demonstrated impacts on hospitalizations). Given the difficulty of fully accounting for differences in state context in regression models, we did not aggregate the Medicaid data across states to conduct the impact analyses.

The remainder of this chapter provides further details on our approach to state selection, data acquisition, identification of the treatment and comparison groups, and the regression methods.

i. State selection

In collaboration with ASPE, SAMHSA, and CMS, we initially selected four states for inclusion in the impact analysis (Missouri, Oklahoma, Oregon, and Pennsylvania) based on our understanding of the completeness and usability of their Medicaid enrollment data, FFS claims, and managed care encounters, as well as the ability to identify Medicaid claims/encounters for individuals who received care from CCBHCs and community behavioral health clinics in the state during the two years before and after the demonstration began. After receiving data from Oregon, we determined that we could not identify a viable comparison group and therefore excluded the state from the impact analysis.

ii. Data sources

We established data use agreements with each state to obtain Medicaid enrollment files, FFS claims, and managed care encounter records.⁵ The enrollment files contain dates of Medicaid enrollment, demographic characteristics (age, race, and ethnicity) and Medicaid eligibility category (low-income, disabled, child, and others depending on the state). The FFS claims and managed care encounter data provide information on all Medicaid-covered services provided to beneficiaries, including the daily (for Pennsylvania and Missouri) and monthly (for Oklahoma) PPS claims submitted by CCBHCs. All three states submitted CCBHC claims or encounter records using the Healthcare Common Procedure Coding

⁵ We considered using Transformed Medicaid Statistical Information System (T-MSIS) data from CMS, but it was not available at the beginning of our evaluation.

System (HCPCS) billing codes that CMS developed for this demonstration: HCPCS code T1040 for billing the PPS-1 daily rate⁶ and HCPCS billing code T1041 for billing the PPS-2 monthly rate.⁷

iii. Data limitations

There were four major limitations of the data used for the impact analyses.

1. ***Services provided in Institutions for Mental Disease (IMDs).*** Medicaid claims and encounter records may not capture all stays in IMDs because states do not receive federal matching funds for these services.⁸ This limitation may affect Oklahoma more than Missouri and Pennsylvania. Missouri uses Medicaid managed care in lieu of authority for inpatient stays in IMDs (KFF 2019), meaning that at least some portion of these stays are likely captured in the state’s managed care encounter data. Pennsylvania also uses such authority, although the time period the authority covers is unclear. Oklahoma Medicaid does not provide inpatient care through managed care arrangements and therefore cannot pay for IMD stays through managed care. However, we expect this issue to equally affect the treatment and comparison groups in all states. As a result, we do not expect it to compromise the internal validity of our comparisons unless the relative rate at which CCBHC clients receive inpatient care from IMDs versus general hospitals or other non-IMD inpatient facilities differs from non-CCBHC clients. That said, hospitalization rates were roughly comparable across states and to external benchmarks, reducing our concern that the IMD exclusion would heavily bias our analyses.
2. ***Managed care enrollment implications for costs analysis.*** Missouri and Pennsylvania enroll most Medicaid beneficiaries into comprehensive managed care plans, which limits our ability to directly measure payments to providers or total cost of care. Pennsylvania did not include provider payment data on their managed care encounter records because the available payment data did not accurately reflect Medicaid payments or costs. Missouri included payment variables for some types of FFS claims and managed care encounters. However, the payment amounts on most managed care encounters were \$0 (including all inpatient claims covered by managed care); all FFS inpatient claims also reported \$0 payments. In both states, a small non-representative group of Medicaid beneficiaries were not enrolled in managed care, but cost estimates from these beneficiaries likely do not generalize to the larger Medicaid population. As a result of these limitations, we did not use the Medicaid data to conduct a cost analysis for these two states. In Oklahoma, the opposite is true: almost all services are billed and paid through FFS arrangements and, therefore, cost analyses were feasible.⁹
3. ***Observing changes in ambulatory service use in Oklahoma.*** CCBHCs in Oklahoma (the only PPS-2 state in the impact analysis) received a monthly payment for each beneficiary to whom they provided services during the month, based on a single claim submitted during the month for that beneficiary. As a result, the number of visits beneficiaries made to the CCBHC during the month is unknown.

⁶ HCPCS T1040 is defined as “Medicaid certified community behavioral health clinic services, per diem.”

⁷ HCPCS T1041 is defined as “Medicaid certified community behavioral health clinic services, per month.”

⁸ On May 6, 2016, CMS released the final Medicaid managed care rule and clarified that, in states that allow it, managed care plans may use their capitated payments to pay for IMDs as an alternative setting in lieu of state plan-covered services for enrollees over age 21 and under age 65 who stay in IMDs for 15 or fewer days in a given month. Therefore, some portion of IMD stays may be included in managed care encounter data; however, given variability in the treatment of IMD stays across states and the limitations regarding IMD stays as a result of the rule, managed care encounter data will likely undercount IMD stays to varying and unknown degrees.

⁹ Oklahoma provides capitated payments to primary care providers for primary care case management. All other services are reimbursed through FFS arrangements.

Therefore, we calculated a monthly CCBHC use measure for Oklahoma that measured whether a beneficiary had at least one visit per month, rather than the number of visit-days per month as in Missouri and Pennsylvania (see Appendix D, Table D.2 for more information on measures). Oklahoma did not differ from other states in the methods used to measure hospitalizations, ED visits, and ambulatory physical health care (they were measured as individual visits, as in the other states).

4. ***Exclusion of three CCBHCs in Pennsylvania.*** The structure of the data files provided by Pennsylvania resulted in the exclusion of three of the seven CCBHCs from our impact analysis, as our inspection of the data suggested that the claims files did not contain complete claims for all CCBHCs in the baseline period. This is because the data were limited to providers classified by the state as “outpatient mental health” in both the baseline and intervention periods. We suspect that some of the clinics that became CCBHCs during the intervention period had operated under different provider codes prior to becoming CCBHCs, resulting in the exclusion of their baseline period claims. In consultation with the state, we were unable to overcome this data limitation and decided in collaboration with ASPE to include only the four CCBHCs that appeared to have complete claims in both the baseline and demonstration periods. Two of the excluded CCBHCs served rural counties and one served an urban county. The remaining four CCBHCs retained in the analysis serve a mix of urban, suburban, and rural counties.

iv. Identification of treatment and comparison groups

We first identified beneficiaries who received at least one service from a CCBHC (treatment group) or other community behavioral health clinic that did not become a CCBHC (comparison group) any time during the baseline or intervention period. We collaborated with officials in each state to select an appropriate set of clinics that did not become CCBHCs to identify the comparison group. Generally, these clinics provided a similar scope of services to the clinics that became CCBHCs during the baseline period. Because we used a longitudinal design that follows a single sample of treatment and comparison group beneficiaries from the baseline period through the demonstration, we applied a series of exclusions to narrow the beneficiary population included in the final analytic sample (see Appendix D for these steps and counts of beneficiaries excluded at each step). Once we defined the study population for each state, we assigned beneficiaries to the treatment or comparison group based on where they last received care during the baseline period. We assigned beneficiaries to the treatment group if their last visit to a community behavioral health clinic before the demonstration start date was a clinic that became a CCBHC. We assigned beneficiaries to the comparison group if their last visit to a community behavioral health clinic was a clinic that did not become a CCBHC (representing care as usual). We considered using an alternative treatment/comparison group assignment method based on plurality of visits to community behavioral health clinics during the baseline period, but we found that this resulted in similar groups as using the most recent visits during the baseline period.

v. Analyses

We used propensity score methods to weight or match (depending on the state) the comparison group to account for the fact that certain beneficiaries may be more likely to visit CCBHCs compared to other beneficiaries. The propensity score method matches or assigns higher weights to beneficiaries in the comparison group who have observable characteristics similar to beneficiaries in the treatment group during the baseline period and does not match or assigns lower weights to those who do not share similar characteristics. This strategy attempts to simulate conditions of a randomized controlled trial, in which the two groups are balanced on observable characteristics if randomization is successful. To the extent that

unobserved characteristics are correlated with observed variables, propensity score models can also achieve good balance on unobserved characteristics between the two groups. However, it is always possible that there are unobserved characteristics that affect selection into the treatment group that are not correlated with observed characteristics.

We used propensity score weighting (rather than matching) for Missouri and Oklahoma due to the relatively smaller comparison group sample sizes that generally would make matching challenging. The treatment and comparison groups generally had similar levels and trends in outcomes before and after propensity score weighting in Missouri (see Appendix D, Table D.3). In Oklahoma, the groups had similar trends in but differed on some levels of outcomes. We found it challenging to get both balance and parallel trends in outcomes. Given this tradeoff, we prioritized parallel trends because the parallel trend assumption is critical for this study design. Prioritizing trends also helped protect against regression to the mean, which we examined visually in graphs after weighting the two groups.

We used propensity score matching in Pennsylvania because the pool of comparison group beneficiaries was much larger than the treatment group. As part of this process, we also exact matched on managed care plan enrollment. In Pennsylvania, managed care plans are regional; by exact matching on enrollment in specific physical health and behavioral health managed care plans, we ensured that the treatment and comparison groups were drawn from the same regions and had access to the same provider networks, increasing comparability between the two groups.

The difference-in-differences analyses for continuous outcomes used ordinary least squares with beneficiary fixed effects and estimated impacts for the full 24-month demonstration period, as well as each of the two 12-month periods after the start of the demonstration. We conducted two sensitivity tests to check the robustness of the models. First, to determine whether the results might be sensitive to outliers--that is, beneficiaries with extremely high service use or costs--in either group, we truncated (or top-coded) outcomes at the 98th percentile across all beneficiaries in the analytic sample. Second, we implemented the regression models using two years (instead of one year) of baseline data to examine whether the impact estimates changed when we accounted for longer pre-demonstration trends.

In addition to assessing impacts on the full population in each state, we also conducted stratified analyses separately for: (1) adults versus children/adolescents (to align with Medicaid eligibility categories in the states, we defined adults as those age 20 and older and children/youth as those age 19 and under as of the start month of the demonstration); and (2) beneficiaries with an SUD diagnosis on any claim during the two-year baseline period versus those without, to determine whether impacts were concentrated in these groups. We consider these analyses exploratory. We did not exact match on these characteristics, and, as a result, there may be imbalance between the groups in levels and trends of baseline outcomes that could bias the findings.

We also modeled binary outcomes--the probability that a beneficiary had any inpatient stay or any ED visit using a post-period-only framework where the baseline outcome measure (such as any inpatient stay or any ED visit during the baseline period) and beneficiary-level characteristics were included as covariates. For these models, we did not use beneficiary fixed effects and instead controlled for the following beneficiary characteristics at baseline to adjust for any residual imbalance between the groups after weighting or matching (see Appendix D for variable definitions): age, sex, race, urbanicity of zip code of residence, number of months with full status Medicaid eligibility, Medicaid eligibility category (child, disabled adult, or non-disabled adult), Chronic Illness and Disability Payment System (CDPS)

score,¹⁰ presence of behavioral or physical health conditions, the six-month timeframe with the most recent CCBHC or comparison clinic visit, and whether the majority of the beneficiary's claims were managed care or FFS.¹¹

¹⁰ The CDPS was developed by researchers at the University of California, San Diego to adjust Medicaid payments to managed care organizations (MCOs). A higher CDPS score signifies a higher expected risk profile and higher expected costs, whereas a lower CDPS score signifies a lower expected risk and lower expected costs (Kronick et al. 2000). The scores are normalized so that the average cost in each population is one. A score above one indicates higher than average expected costs, and a score below one indicates lower than average costs.

¹¹ In Missouri, we also controlled for participation in one of the state's programs for beneficiaries with mental health or SUDs (Community Psychiatric Rehabilitation [CPR] or Comprehensive Substance Treatment and Rehabilitation [CSTAR] programs). In Pennsylvania, we controlled for behavioral health MCO and physical health MCO enrollment instead of controlling for majority managed care or FFS.

III. DEMONSTRATION IMPLEMENTATION

During the demonstration, CCBHCs expanded services, hired and trained staff, and implemented new care processes to meet the certification criteria. However, states and CCBHCs varied considerably in their characteristics at the outset of the demonstration, and thus the changes made to adhere to demonstration requirements reflected the diversity in state delivery systems and the features of the CCBHCs that participated. In this chapter, we describe: (1) the context in which states implemented their demonstrations; (2) the services that CCBHCs added as a result of the certification process and the extent to which they were able to sustain those services throughout the demonstration; (3) the types of staff CCBHCs hired and employed during the demonstration; (4) the strategies CCBHCs used to increase access to care for clients; and (5) the relationship that CCBHCs established and maintained with external providers to facilitate referrals and care coordination. We also briefly describe challenges CCBHCs and states experienced in implementing certain demonstration requirements and the strategies used to overcome them. We then summarize implementation across the demonstration states and provide some state-specific examples. Our previous evaluation reports provide further state-level findings (Wishon Siegwarth et al. 2019).

A. State Context at the Beginning of the Demonstration

The CCBHC demonstration was implemented in states with varying arrangements for the coverage, oversight, and administration of mental health and SUD services at the beginning of their demonstrations. States generally fell into two categories, including those with: (1) a single state agency or a division within a state agency responsible for purchasing and administering all public behavioral health services in the state (Missouri, Nevada, New York, Oregon, and Oklahoma); or (2) administration of behavioral health services shared by two state agencies (Minnesota, Pennsylvania, and New Jersey). States did not change these arrangements to facilitate the demonstration. In most states, local entities such as local mental health authorities and counties also played a role in overseeing and/or directly providing behavioral health services. To the best of our knowledge, the role of these local entities did not change to facilitate the demonstration either.

Medicaid provided the largest share of funding for public mental health services in all eight states. In addition to Medicaid programs, states used federal block grant funds and state and local funding sources to provide behavioral health care for residents not eligible for Medicaid. All states directly operated state psychiatric hospitals, and all contracted with providers of outpatient mental health and SUD treatment. In addition, two states (Oklahoma and Pennsylvania) directly operated a subset of the state's outpatient behavioral health clinics.

With the exception of Oklahoma, all demonstration states provided most Medicaid services through managed care arrangements. Four states contracted with MCOs to manage both physical and mental health services (Minnesota, Missouri, New York, and Nevada), two states carved behavioral health services out of managed care and delivered them either through the FFS system or managed behavioral health organizations (New Jersey and Pennsylvania), and one state, Oregon, engaged regional public-private partnerships (called Coordinated Care Organizations) to manage physical and behavioral health care for Medicaid beneficiaries. Certain populations were exempt from enrollment in managed care in each state (although in some states, individuals in the exempt groups could opt into managed care plans). In most states, managed care was available to Medicaid beneficiaries state-wide. In Missouri, however, managed care plans were available to beneficiaries who reside in certain regions of the state; other

beneficiaries were served through the FFS system. Oklahoma provides capitated payments to primary care providers for primary care case management, but all other Medicaid services are provided through FFS arrangements.

Every state had Medicaid reforms underway that may have affected the clinics participating in the demonstration. For example, six states (all except Nevada and Pennsylvania) were implementing health homes for Medicaid beneficiaries at the beginning of their demonstrations, although the availability of health home services varied across states. New York was undergoing a significant redesign of its Medicaid program that involved introducing new managed care options for individuals with SMI and SUDs. Nevada had a Medicaid Section 1115(a) demonstration program to implement a care management program that partners with local providers to give care management and support to high service users. Pennsylvania was participating in the Medicaid Innovation Accelerator Program to integrate primary and behavioral health care and was exploring providing services through health homes.

B. Scope of Services

CCBHCs were required to provide a broad set of services that include but are not limited to the following nine service types listed in the authorizing legislation:

- Twenty-four hour crisis services.
- Screening, assessment, and diagnosis.
- Patient-centered treatment planning.
- Outpatient mental health and substance use treatment.
- Screening and monitoring of key health indicators.
- TCM.
- Psychiatric rehabilitation services.
- Peer and family support and counselor services.
- Intensive, community-based mental health care for members of the armed forces and veterans.

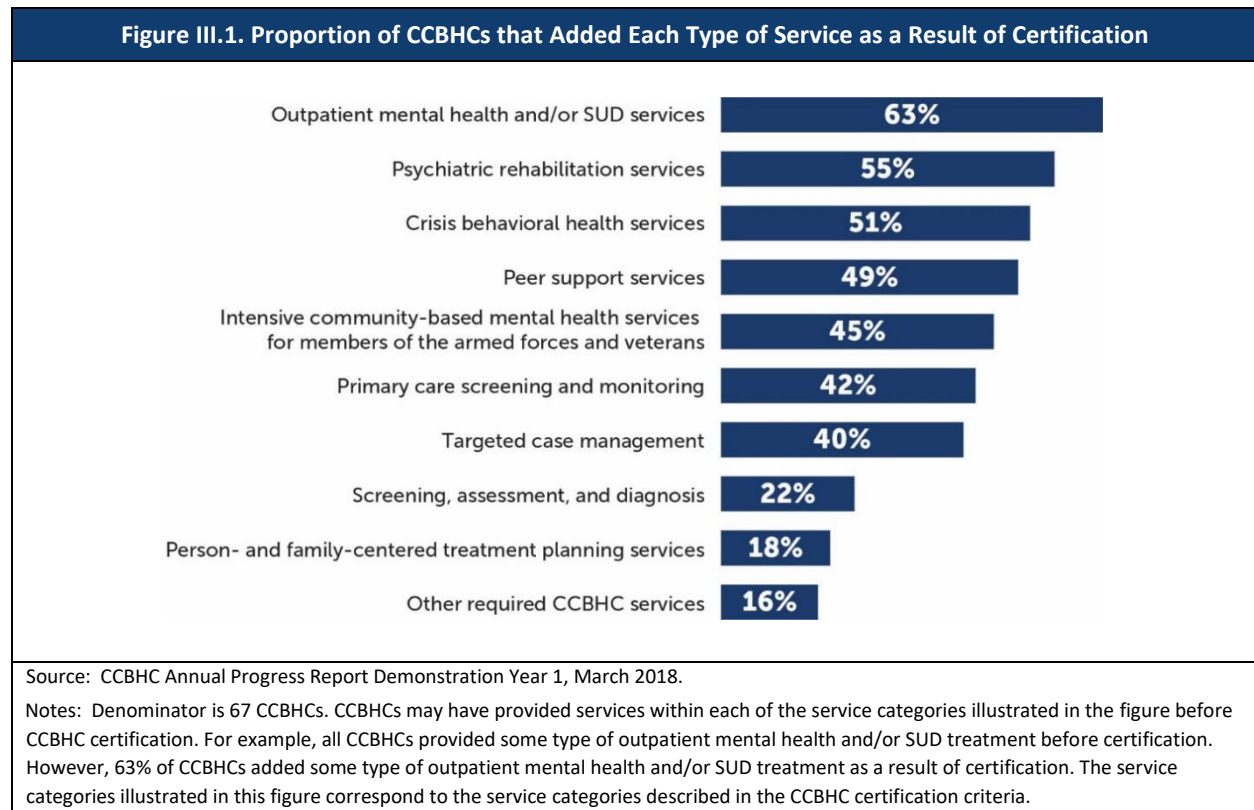
PAMA lists the minimum scope of service requirements for CCBHCs but also affords states flexibility in establishing those requirements, thereby ensuring alignment of the scope of services with states' respective Medicaid State Plans and other state regulations and goals for the demonstration. For example, Oregon required its CCBHCs to provide 20 hours of on-site primary care services per week beginning in the second demonstration year in addition to meeting the CCBHC criteria's requirements for screening and monitoring of health indicators. PAMA requires that CCBHCs directly provide the first four services listed above but allows CCBHCs to deliver the remaining services through a relationship with an external provider known under the demonstration as a DCO--an entity engaged in a formal financial relationship with CCBHCs.¹² The CCBHC criteria require DCOs to adhere to the same service delivery and quality requirements as CCBHCs. As described below, CCBHCs did not frequently engage DCOs to deliver services, except for crisis services.

¹² In addition, a DCO could provide crisis behavioral health services if the DCO is an existing state-sanctioned, certified, or licensed system or network. DCOs could also provide ambulatory and medical detoxification in American Society of Addiction Medicine categories 3.2-WM and 3.7-WM.

To address PAMA’s requirement for an assessment of the scope of services provided by CCBHCs as compared to community-based mental health services provided in states not participating in a demonstration program and in areas of a demonstration state that are not participating in the demonstration, the evaluation examined the types services that CCBHCs added to meet the certification requirements, including the adoption of EBPs, and the challenges CCBHCs faced in providing the full scope of CCBHC services.

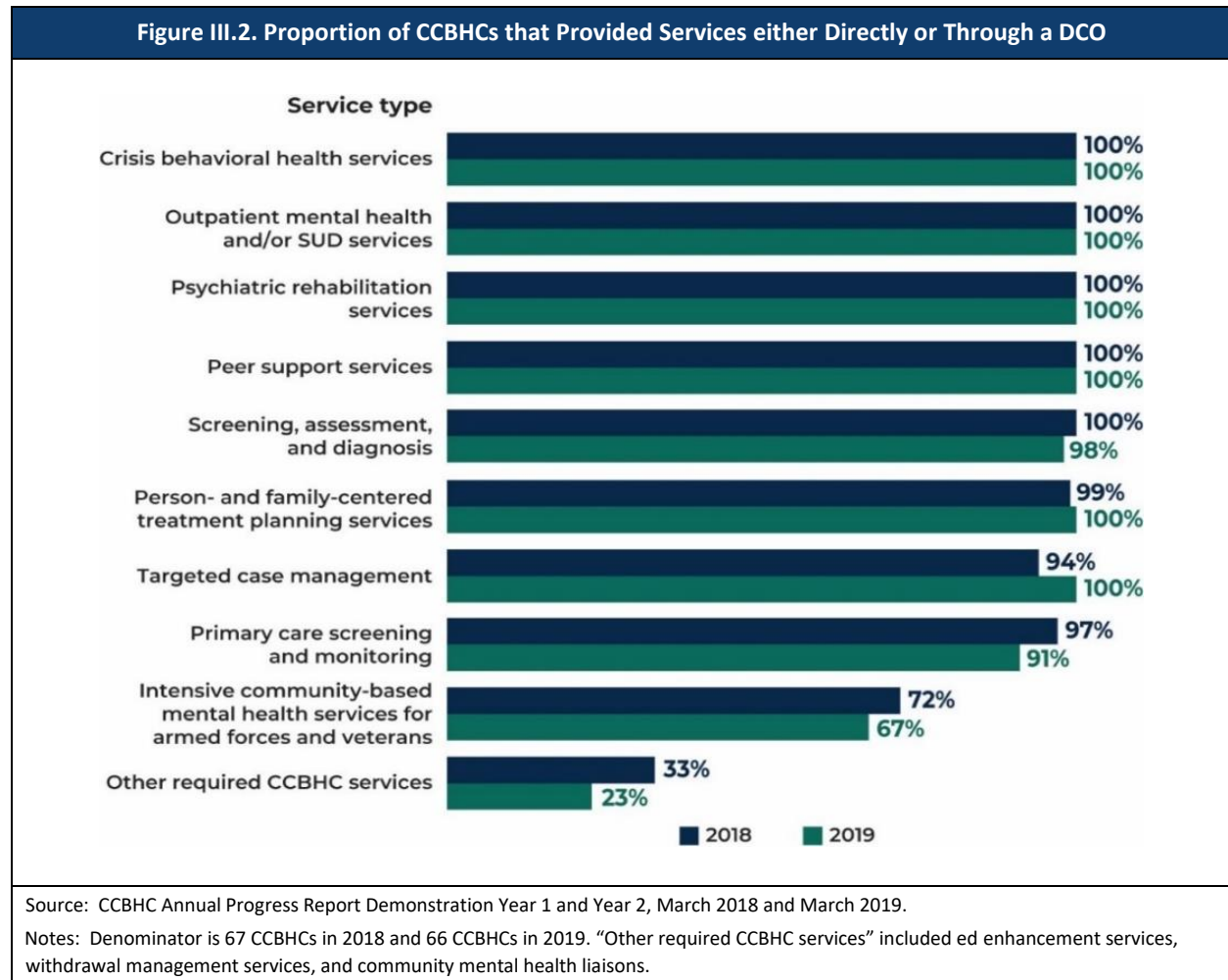
1. Range of services offered in each demonstration year

Eighty-four percent (n = 56) of CCBHCs expanded their scope of services to meet the certification criteria. CCBHCs most often added services to meet certification requirements in the areas of outpatient mental health and/or SUD services, psychiatric rehabilitation services, and crisis behavioral health services (Figure III.1). Other services commonly added as a result of certification included peer support services, intensive community-based mental health services for members of the armed forces and veterans, primary care screening and monitoring, and TCM. Fewer CCBHCs reported the addition of screening and assessment services or person and family-centered treatment planning.



Changes to services to meet certification criteria varied across states, depending on the existing service array offered by the CCBHCs. According to officials in Pennsylvania, New York, and Missouri, before the demonstration the clinics that became CCBHCs provided the full scope of CCBHC services through a mix of in-house (that is, services provided on-site) and externally contracted providers. CCBHCs in these states typically brought some of those previously contracted services in-house during the certification process. As a result, this was less of an expansion of services for the populations served by these clinics but instead a shift to the CCBHCs providing these services directly. In other states, the clinics that

became CCBHCs did not provide the full range of CCBHC services prior to the demonstration. For instance, in Nevada, the clinics that became CCBHCs primarily provided SUD treatment and did not contract with other providers to deliver services described in the CCBHC certification criteria. To meet certification criteria, the clinics had to add the full range of specialty mental health services, including psychiatric rehabilitation and child/adolescent services.



Changes to services also varied based upon the needs of individual CCBHCs' client populations. For example, one CCBHC highlighted its ability to expand the breadth of group services that it offered as a result of the demonstration as important to better tailoring services to its clients. Since the demonstration's outset, the clinic introduced several new group services, such as art therapy, health and wellness, yoga, meditation, mindfulness, and anger management. CCBHC staff and leaders highlighted the benefits of the new group services, noting that the groups promote positive self-care and coping strategies to help clients manage their symptoms. In addition, staff commented that the groups help keep high-need clients engaged in services. One therapist remarked on the difficulty of keeping clients who are less verbal engaged in services, stating, "Because we provide groups...we can see more clients' experiences and we can keep them engaged." Overall, clinic staff and leadership echoed that the expansion of groups was pivotal in fostering a client-centered environment, promoting resiliency, and creating community.

CCBHCs sustained the nine required services throughout the demonstration. All or nearly all CCBHCs in both DY1 and DY2 reported that they provided the required services (Figure III.2). The exception was the delivery of community-based mental health services for members of the armed forces and veterans. In response to this finding, some state officials reported that CCBHCs were not located in communities in which many members of the armed forces or veterans sought services from community behavioral health centers. However, they also reported that some CCBHCs struggled to engage these populations and to develop referral relationships with agencies that serve veterans and military members.

2. CCBHC adoption of evidence-based practices as a result of certification

CCBHCs offered a wide range of EBPs and psychiatric rehabilitation and other services. The CCBHC criteria required states to establish a minimum set of EBPs and psychiatric rehabilitation services that CCBHCs in the state would be required to provide. The criteria provided examples of the specific types of EBPs and psychiatric rehabilitation services states might require, including those shown in Table III.1 below. All or almost all CCBHCs provided many types of EBPs in both DY1 and DY2, including motivational interviewing, individual and group CBT, dialectical behavior therapy (DBT), evidence-based medication evaluation and management, and community wraparound services for youth/children. Most CCBHCs were able to sustain or provide more of these services in the second year of the demonstration (Table III.1). Slightly more CCBHCs provided psychiatric rehabilitation (including supported employment, supported housing, and supported education) and peer support services in DY2 compared to DY1 (Table III.1).

The evaluation did not obtain data from all CMHCs or community behavioral health clinics across states to facilitate direct comparisons with CCBHCs, but 2020 National Mental Health Services Survey data suggest that several of these services were less frequently available from other CMHCs across the demonstration states (Wishon et al. 2021). For example, in 2020, only 49 percent of state-licensed or certified CMHCs that were not CCBHCs in demonstration states provided any type of SUD treatment, 59 percent had a crisis intervention team, 43 percent provided peer support, 40 percent offered on-site services for psychiatric emergencies, and 27 percent provided supported housing).

Officials in two states noted that, even though EBPs have been an important component of the CCBHC service array, states found it necessary to grant CCBHCs some flexibility to adjust their offerings to ensure that their services reflected the needs of their client populations as those needs came into focus. In Nevada, for example, state officials mentioned that they initially asked CCBHCs to provide specific EBPs. However, the state later recognized that requiring CCBHCs to expend significant resources to provide a service used by only a small percentage of clients was not a judicious use of funds for CCBHCs, particularly when other less resource-intensive services were available to meet the same need. Nevada, therefore, planned to provide CCBHCs with more flexibility to meet what it perceived as the underlying intent of the EBP requirement. For example, the state initially expected CCBHCs to provide trauma-focused CBT, but CCBHCs found this intervention too resource-intensive to implement. In response, the state broadened the requirement to allow CCBHCs to establish a trauma-specific framework for interventions. An official in the state reported that the state worked to determine “how [the state] can stay true to the intent of EBPs but give flexibility to the clinic that is appropriate to meet the need of their clients and not completely dictated by the state.”

Table III.1. EBPs and Other Services Offered at CCBHCs			
EBP or Service	Proportion of CCBHCs that Offered Service in DY1	Proportion of CCBHCs that Offered Service in DY2	Added to Meet CCBHC Certification Requirements
Motivational interviewing*	100%	100%	9%
Individual CBT*	100%	100%	4%
Peer support for clients	100%	100%	43%
Emergency crisis intervention	100%	100%	31%
24-hour mobile crisis teams	97%	98%	46%
Crisis stabilization	99%	97%	31%
Primary care screening and monitoring	97%	91%	42%
TCM	94%	100%	40%
Evidence-based medication evaluation and management*	87%	94%	7%
Group CBT*	84%	88%	6%
MAT for alcohol or opioid use*	84%	92%	46%
Community wraparound services for children and youth*	76%	77%	15%
Dialectical behavioral therapy*	73%	76%	7%
Peer support for families	73%	83%	34%
Supported employment	75%	82%	27%
Supported housing	70%	79%	12%
Intensive community-based services for members of the armed forces and veterans	72%	67%	45%
Supported education	54%	68%	16%
Multisystemic therapy*	40%	56%	7%

Source: CCBHC Annual Progress Report Demonstration Year 1 and Year 2, March 2018 and March 2019.
Notes: Denominator is 67 CCBHCs in 2018 and 66 CCBHCs in 2019.
* EBP mentioned in CCBHC criteria for states to consider requiring.

Nearly all CCBHCs provided primary care screening and monitoring and 55 percent also provided on-site primary care services during the demonstration. In DY1 and DY2, respectively, 97 percent (n = 65) and 91 (n = 60) percent of CCBHCs reported that they provided primary care “screening and monitoring” (as required by the certification criteria). Fifty-five percent (n = 37) also provided on-site primary care services both years (on-site primary care is not required by the certification criteria). Among CCBHCs that provided on-site primary care, 84 percent (n = 31) provided these services before certification; the remaining 16 percent (n = 6) added on-site primary care during or after the certification process.

3. Challenges to providing the full scope of services and strategies to overcome challenges

State officials identified some services as initially challenging for some CCBHCs to implement but indicated that the states generally addressed these challenges early in the demonstration. At the beginning of the demonstration, state officials often reported that outpatient SUD treatment and peer support services were the most challenging for CCBHCs to provide. However, in the second demonstration year, officials in most states noted that CCBHCs and states had resolved most challenges. State officials described overcoming several barriers to the implementation of the full scope of services, including the following:

- ***Inexperience in providing specific services to certain populations.*** As described above, CCBHCs in some states were required to add new service lines or types of services to fulfill the demonstration

criteria. In Minnesota, for example, before the demonstration, CCBHCs provided some services only to adults and others only to children.

- **State credentialing and licensure requirements.** Officials in some states described challenges either in obtaining licensure to provide certain required services or hiring staff with the credentials needed to provide such services. For example, stringent state requirements for licensure for ambulatory withdrawal management in New Jersey initially posed a challenge for the state in certifying its CCBHCs. The state worked closely with its CCBHCs and state licensure office to help CCBHCs meet the licensure requirements.
- **Workforce shortages.** Some states initially experienced challenges in recruiting and hiring certain types of staff. Officials in several states, including Minnesota, New Jersey, and New York, noted challenges in hiring peer support staff in rural areas.

Officials in most states also suggested that the comprehensive and collaborative nature of service-provision represented a paradigm shift for their states, CCBHCs, and clients alike.

C. Staffing and Training

The certification criteria require CCBHCs to maintain staff appropriate to providing comprehensive behavioral health care. The criteria include some specific staffing requirements; for example, CCBHCs are required to have a psychiatrist serving in the role of medical director.¹³ However, the certification criteria allow states flexibility to develop more detailed plans for appropriately staffing CCBHCs according to their existing systems of licensure and accreditation and based on the needs of the populations served by the states' CCBHCs.¹⁴ The certification criteria also require CCBHCs to provide staff training in a variety of topics, including provision of culturally competent care, patient-centered care, risk assessment, suicide prevention, and suicide response.

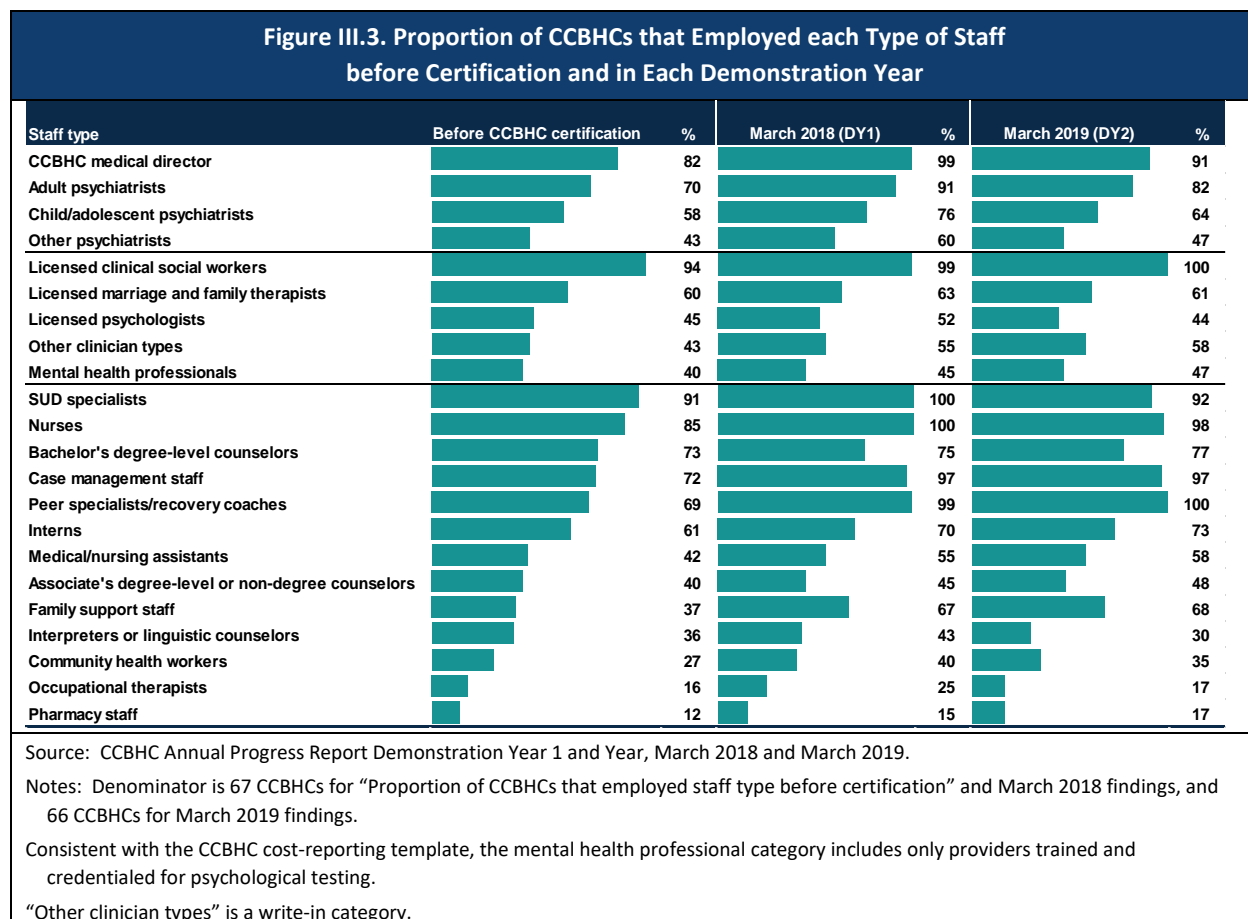
1. Staff hiring and retention

CCBHCs employed a wide variety of clinical staff before the demonstration. Before CCBHC certification, most CCBHCs employed licensed clinical social workers (LCSWs), SUD specialists, nurses, a medical director, bachelor's degree-level counselors, case managers, adult psychiatrists, peer specialists/recovery coaches, and child/adolescent psychiatrists (Figure III.3). However, before certification, fewer CCBHCs employed family support staff, community health workers, interpreters or linguistic counselors, occupational therapists, and mental health professionals trained and credentialed to provide psychological testing. State officials suggested that variation across CCBHCs in the types of staff that they employed before the demonstration was related in part to the types of services the clinic

¹³ In cases in which a CCBHC is unable to employ a psychiatrist as medical director (such as because of a documented behavioral health professional shortage in the community), the criteria specify that "a medically trained behavioral health care provider with appropriate education and licensure with prescriptive authority in psychopharmacology who can prescribe and manage medications independently pursuant to state law" may serve as a CCBHC medical director.

¹⁴ The criteria provides examples of CCBHC staff types states could require, including the following: (1) psychiatrists (including child, adolescent, and geriatric psychiatrists); (2) nurses trained to work with consumers across the lifespan; (3) licensed independent clinical social workers; (4) licensed mental health counselors; (5) licensed psychologists; (6) licensed marriage and family therapists; (7) licensed occupational therapists; (8) staff trained to provide case management; (9) peer specialists/recovery coaches; (10) licensed addiction counselors; (11) staff trained to provide family support; (12) medical assistants; and (13) community health workers (SAMHSA 2016).

historically provided. For example, before the demonstration, the CCBHCs in Nevada focused primarily on the delivery of treatment for SUD, whereas the CCBHCs in New York primarily provided services for mental health disorders. Consequently, Nevada’s CCBHCs had relatively few mental health providers on staff before the demonstration, whereas New York’s CCBHCs employed a broad range of mental health providers but fewer substance use treatment providers.



Officials across all states reported that CCBHCs were able to ramp up quickly and begin hiring staff; they succeeded in filling the required staff positions in the first demonstration year. A substantially larger proportion of CCBHCs employed case managers, peer specialists/recovery coaches, child/adolescent psychiatrists, and family support workers in the first demonstration year than before certification (Figure III.3). For example, 69 percent of CCBHCs (n = 46) employed peer specialists/recovery coaches before certification compared with 99 percent of CCBHCs (n = 66) in the first demonstration year (Figure III.3). In contrast, the proportion of CCBHCs that employed LCSWs, bachelor’s degree-level counselors, and mental health professionals trained and credentialed for psychological testing did not change substantially as a result of certification. These findings varied somewhat across states, given differences in the treatment focus of CCBHCs before the demonstration.

Consumer and family organization representatives also perceived that CCBHCs were able to hire the types and number of staff, including peers, required for fully addressing consumers’ mental health and SUD service needs. Representatives suggested that the use of a PPS may have facilitated additional hiring. The use of a PPS provided a unique opportunity for states and CCBHCs to develop rates based on

the expected cost of care that accounted for total costs associated with delivering the nine required services. This included the ability to use a mix of staffing models, as well as pay for services that were allowed under the demonstration but might not have been traditionally reimbursed by federal or state Medicaid programs. In particular, representatives noted that the ability to hire and retain peers had substantially increased consumer engagement. In one state, for example, a representative reported that several CCBHCs partnered with hospitals and other organizations to embed peers in order to engage consumers in times of crisis, noting “the peers bring a lot to the table to help individuals and families navigate the systems with a lived experience perspective.” Representatives from organizations in the other states noted that CCBHCs continued to create and fill peer specialist and recovery coach positions throughout the demonstration, further confirming peers’ importance to the model.

Although CCBHCs were largely able to maintain their staffing during the demonstration, there were some types of staff that were less often employed in the second demonstration year. (For example, 92 percent of CCBHCs employed SUD specialists in DY2 versus 100 percent in DY1, and 64 percent of CCBHCs employed child/adolescent psychiatrists in DY2 versus 76 percent in DY1.) Officials in all but one state cited uncertainty about the future of the demonstration as the most significant staffing challenge for CCBHCs. Drawing on feedback from the CCBHCs, officials reported that the uncertainty has adversely affected their ability to retain staff and maintain workforce morale as the demonstration originally drew to a close. Concerns about the effects of uncertainty on staff appeared most acute in states that had not, at the time of interviews, developed a plan to sustain components of the demonstration, although state officials nearly unanimously voiced the same concern. Officials in two states that were working to continue parts of the demonstration mentioned that, even though CCBHCs maintained the required staffing, clinic leaders were reluctant to add new positions or fill vacancies caused by turnover for fear of not being able to sustain those staff positions after the demonstration ends.

In addition to uncertainty about the future of the demonstration, CCBHCs reported a few other challenges related to hiring and retaining staff. For example, CCBHCs most commonly described challenges related to: (1) rural or remote CCBHC locations; (2) the inability to meet salary expectations; (3) regional and state workforce shortages, especially in behavioral health; and (4) competition with other health care facilities such as hospitals and non-profit and for-profit health systems.

State officials outlined several strategies adopted by CCBHCs to address ongoing staffing challenges. For example, officials in four states reported that a primary strategy employed by CCBHCs throughout the demonstration was to offer enhanced salaries, noting that the offer was possible only because of increased funding under the demonstration’s PPS. One official noted that “one of the CCBHCs had been able to be more successful because they finally realized that they had to pay more. And once that clinic did, they all started paying more. The CCBHCs were stuck in the [pre-demonstration] mentality that ‘we can’t afford to pay it’ but realized that, in order to staff up as quickly as necessary and stay staffed up, we’re going to have to increase salaries. And because of the PPS, they did.” Officials highlighted several other strategies that CCBHCs have used to combat staffing challenges, including the following:

- Relying on telehealth to fill gaps and extend staff reach while seeking additional staff (in progress reports, three CCBHCs mentioned the addition of telehealth positions to their staff in order to address staffing challenges, especially telepsychiatry).
- Engaging recruiters to advertise to and hire professionals from out of state.
- Engaging the state’s credentialing board to share job announcements with all credentialed providers in the state.

2. Staff training

As of DY2, all CCBHCs reported that, in the past 12 months, they provided at least one of the types of staff training required by the CCBHC criteria (Table III.2). For most types of training, the proportion of CCBHCs that reported providing the training in the DY2 progress report was similar to that in DY1, except for risk assessment, suicide prevention, suicide response, and person and family-centered care, all of which increased by more than a few percentage points.

Table III.2. CCBHC Staff Training				
Topic of Training	CCBHCs that Provided Training in Past 12 Months, March 2018 (DY1)		CCBHCs that Provided Training in Past 12 Months, March 2019 (DY2)	
	N	%	N	%
Required by CCBHC certification criteria				
Risk assessment, suicide prevention, and suicide response	62	93	66	100
Evidence-based and trauma-informed care	61	91	63	95
Cultural competency training to address diversity within the organization's service population	59	88	60	91
The role of family and peers in the delivery of care	52	78	51	77
Person and family-centered care	51	76	56	85
Recovery-oriented care	51	76	51	77
Primary and behavioral health care integration	51	76	52	79
Other training (not required by CCBHC certification criteria)				
Other (see Table III.3)	40	60	38	58
Any training listed above ^a	66	99	66	100
No training	1	1	0	0
Total CCBHCs	67	100	66	100
Source: CCBHC Annual Progress Report Demonstration Year 1 and Year 2, March 2018 and March 2019.				
Notes: The proportion of CCBHCs that provided each type of training varied across states to some extent, but the proportion within each state was relatively consistent from March 2018 to March 2019, except for in New Jersey, where it appeared that a larger proportion of CCBHCs delivered various types of training in 2019 than in 2018.				
a. "Any training" was calculated by combining responses across all progress report response options from each year to examine the number and proportion of CCBHCs that provided at least one of the training types listed in the table or "other" trainings the CCBHCs reported in response to an open-ended question.				

CCBHCs reported that they provided a diverse range of non-required "other" trainings. In a write-in question in DY2, the most commonly reported non-required trainings included motivational interviewing (an EBP included in the CCBHC criteria for states to consider requiring); training focused on serving veterans and "military culture;" and training in two other EBPs, CBT and MAT (Table III.3).

Table III.3. Examples of Other Types of Trainings				
Topic of Training	CCBHCs that Provided Training in Past 12 Months, March 2018 (DY1)		CCBHCs that Provided Training in Past 12 Months, March 2019 (DY2)	
	N	%	N	%
Motivational interviewing ^a	7	10	12	18
Serving veterans and “military culture”	15	22	9	14
CBT ^a	6	9	6	9
MAT ^a	3	5	5	8
Ethics	2	3	5	8
Dialectical behavioral therapy ^a	2	3	5	8
Trauma-informed care	4	6	4	6
Serving LGBTQ individuals	1	2	3	5
Eye movement desensitization and reprocessing	3	5	2	3
Disaster preparedness and response training	3	5	0	0
Total CCBHCs	67	100	66	100

Source: CCBHC Annual Progress Report Demonstration Year 1 and Year 2, March 2018 and March 2019.

a. EBP included in the CCBHC certification criteria for states to consider requiring

States provided ongoing support for CCBHC staff training as the demonstration was implemented. In preparation for and throughout the demonstration’s implementation, all states developed structured networks for regular communication with their CCBHCs to identify gaps in knowledge and provide formal and informal training and support activities. State officials viewed such efforts as essential in identifying and responding to emerging training needs. Officials from all states reported that they held regular meetings with CCBHCs during the early stages of implementation to identify and address CCBHC training and technical assistance needs. As one official stated, “Training topics have covered the entirety of the CCBHC project,” including CCBHC certification criteria, best practices such as trauma-informed care and motivational interviewing, and the PPS and billing, among others. Officials reported that much of the training offered by states and CCBHCs took place during the initial stages of the demonstration, noting that, by the second year, states exhibited less focus on formalized training.

D. Access to Care

CCBHCs were intended to expand access to care in the communities they serve and engage new consumers in care. The certification criteria specify that CCBHCs must provide accessible care, including 24-hour crisis management services; engage consumers quickly through prompt intake services; and treat all consumers, regardless of their ability to pay. This section summarizes the number of individuals served by the demonstration, describes the activities that states and CCBHCs undertook to expand access to care throughout the demonstration, and outlines the perceptions of consumer and family representatives of the effects of the demonstration on access to care.

PAMA requires that HHS reports to Congress include an assessment of access to community-based mental health services under Medicaid in the area or areas of a state targeted by the CCBHC demonstration as compared to other areas of the state. To this end, the evaluation examined activities that CCBHCs implemented to increase access to care and the extent to which consumer and family stakeholder representatives reported that access to care changed as a result of the demonstration.

1. Strategies to increase access to care

CCBHCs used a range of strategies to make services more convenient and tailored to the needs of specific populations throughout the demonstration. For example:

- All CCBHCs reported serving consumers regardless of insurance status or ability to pay in the first demonstration year.
- Almost all CCBHCs reported providing services to consumers with Medicare and private insurance, and serving consumers not residing in their catchment area (Table III.4).
- Almost all CCBHCs reported offering a sliding fee schedule. Among those offering a sliding fee schedule, 73 percent (n = 48) published the fee schedule on their website or provided it to consumers through other means, such as in welcome packets at intake.

Table III.4. CCBHC Payment Policies and Service Provision		
Payment Policy and Service Provision	Number and Proportion of CCBHCs with Policy	
	N	%
Provide services to consumers unable to pay	67	100
Offer a sliding fee schedule	66	99
Provide services to consumers enrolled in Medicare	66	99
Provide services to consumers with private insurance	66	99
Provide services to consumers not residing in clinic catchment area	65	97
Source: CCBHC Annual Progress Report Demonstration Year 1, March 2018.		
Note: The denominator is 67 CCBHCs.		

Although the PPS was intended to reimburse CCBHCs for their expected costs associated with delivering the nine required services, some states reported using supplemental sources of funding to address the impact of providing services regardless of consumers' ability to pay. For example, the Nevada Division of Mental Health contracted with CCBHCs to help offset costs of providing services to consumers who are unable to pay, and CCBHCs could obtain funds from the Nevada Substance Abuse Prevention and Treatment Block Grant for consumers with co-occurring mental illnesses and SUD. The Nevada Division of Welfare also embedded staff in CCBHCs to help uninsured clients who came into the clinic enroll on-site in Medicaid, Temporary Assistance for Needy Families, and the Special Supplemental Nutrition Program for Women, Infants, and Children. State officials stated that "the assistance from the eligibility workers is extremely helpful to the consumers, and the clinic staff cannot imagine *not* having someone on-site now." Similarly, officials in New Jersey mentioned ensuring that CCBHCs were trained on and using presumptive Medicaid eligibility forms and helping consumers enroll in Medicaid in order to reduce the number of individuals without insurance CCBHCs were required to serve.

States and clinics also reported other strategies to improve access, including:

- **Open-access scheduling.** According to state officials, another common way CCBHCs enhanced access to care was to institute open-access scheduling, or same-day scheduling, which is a scheduling method that allows all clients to receive an appointment on the day they request one. Officials in five states mentioned that most or all CCBHCs in their state adopted open-access scheduling. One CCBHC described modifying its scheduling system to accommodate open-access times between scheduled appointment slots. To support the effort, the clinic made at least one therapist available each day to conduct intake assessments and created same-day appointment slots for services. This arrangement allowed potential and existing clients to walk in or call when they were ready to seek

help. CCBHC leadership credited the PPS with facilitating these changes. Under the demonstration, the clinic developed a systematic process that streamlines client enrollment into services. Potential clients who walk into the clinic meet with a referral coordinator who conducts a preliminary screening and then connects the client to a therapist to complete the intake assessment. For clients who contact the clinic by telephone, a referral coordinator screens such clients and then schedules an intake within one week of the initial contact; the clinic reported that intake often takes place within 1-2 days. A therapist then meets with the client for a full intake session, including a drug and alcohol assessment, evaluation of case management needs, and a review of physical health conditions.

- ***Extended service hours.*** In addition to same-day appointments, officials from three states suggested that the demonstration’s requirements for extended service hours significantly enhanced access for CCBHC clients in their states. Some respondents suggested that clients at some CCBHCs did not take advantage of required extended service hours to the extent they expected, and CCBHCs made changes to their availability to meet clients’ needs while fulfilling the requirement. For example, in interviews an official in Minnesota said that “maybe they realized [in Demonstration Year 1] that having evening or Saturday hours, that wasn’t working, so they moved to just have it on an on-call basis...the program intent was being met, but it wasn’t necessarily that they have set [extended] hours.” Similarly, one CCBHC described making group therapy sessions available during evenings and weekends as part of the demonstration. Clinic leaders reported that the change in business hours have been positive, but not without some challenges. Clinic leadership reported that the availability of services beyond business hours required a cultural adjustment among staff members, who were reluctant to provide services on evenings and weekends. Likewise, clinic leaders reported that clients perceived that attending treatment outside normal business hours “took up their weekend.” Staff expressed concern when clients did not use the available services. According to one staff member, “Very few have come even though we have expressed the availability of the services. It has felt like we are begging people to come on Saturdays because we’re trying to build that piece out.”
- ***Changes to appointment duration and frequency.*** Officials in two states mentioned during interviews that, as a key strategy for increasing the CCBHC population’s access, CCBHCs began scheduling more frequent and shorter appointments for high-need consumer populations. For example, officials in Missouri reported that, since the demonstration’s launch, community support specialists or intensive case managers at CCBHCs scheduled frequent (such as several times per week) 30-minute sessions with consumers with SMI and youth with SED in order to target specific problems. Officials reported that CCBHCs expected these frequent, brief visits to reduce crises as well as the use of emergency services among these populations. Officials in two states also indicated that the demonstration has had a major effect on access by streamlining the initial assessment processes and reducing intake and wait-times for initial evaluations.
- ***Telehealth.*** Most CCBHCs provided telehealth services in DY1 and DY2, but most did not indicate that they added these services as a result of certification. Sixty-seven percent of CCBHCs (n = 45) reported that they offered telehealth services as of the DY1 progress report, 80 percent of which (n = 36) already did so before the demonstration. State officials confirmed in March 2018 (DY1) that most CCBHCs initiated telehealth services (specifically, telepsychiatry) to help expand access to services. Use of telehealth services varied somewhat among CCBHCs before the demonstration’s launch; some CCBHCs had robust and long-standing telehealth programs, whereas others were in the early stages of developing telehealth platforms. As of the DY2 progress report, 70 percent of CCBHCs (n = 46) reported that they offered telehealth services, an increase of one clinic from the previous year (not

shown in Figure III.6). Of the 70 percent of CCBHCs offering telehealth services in DY2, the most common services CCBHCs described providing were the following:

- Telepsychiatry, offered by 67 percent of CCBHCs (n = 31) compared to 64 percent of CCBHCs (n = 29) in DY1.¹⁵
- Therapy or counseling, offered by 39 percent of CCBHCs (n = 18) compared to 24 percent (n = 11) in DY1.
- Medication management, offered by 30 percent of CCBHCs (n = 14) compared to 20 percent (n = 9) in DY1.

2. Consumer and family organization perceptions of access to care

Stakeholder organizations representing consumers and families overwhelmingly reported that the CCBHC model improved access to care for CCBHC clients in their states. Respondents from groups in three states reported that the move to open-access scheduling and expanded hours of service improved consumer engagement and the availability of care. One consumer representative noted, for example, that “the wait-times in CCBHCs are down. We get calls from people dissatisfied with services or that they have three to five months for waits. For the CCBHCs, there are no [lengthy] waits in any of the CCBHCs.” Another consumer representative commented that consumers experienced much faster access, noting that the relevant organization has heard that some consumers were surprised by the short lead time for an appointment. Consumer group representatives in another state noted that they observed quicker access among CCBHC consumers for certain services, including medication and therapy.

Consumer and family representatives noted that the comprehensive, one-stop-shop nature of the demonstration brought about greater access to a full range of services. One representative remarked, for example, that “the advantage of the CCBHC is the wraparound services, the full spectrum of services, integrated mental health and SUD or getting peer support and therapy and having it all available there. In some places, especially in rural areas, the advantage of multiple providers in one location [is significant].” Other representatives commented that bringing services (including mental health and SUD services) for both adults and children under one roof facilitated greater access to comprehensive services for whole families, noting that CCBHCs have become family-oriented environments that offer care to children and their parents alike. In addition, a representative from another state reported that state officials shared information on CCBHC quality measures with stakeholders through the state’s quality dashboard system, which displayed data on quality measure performance aggregated at the clinic level. The respondent appreciated the clarity of information presented in this tool and emphasized its utility in tracking the availability and use of EBPs across CCBHCs in the state.

Consumer and family representatives generally credited the demonstration with increasing access to care, yet representatives also identified several ways CCBHCs could further improve access. For example, one representative described ongoing challenges with transportation in rural and frontier communities and pointed to the need to intensify current CCBHC efforts to address transportation issues. In addition, although consumer and family representatives applauded efforts and strides to incorporate peers into the CCBHC workforce, representatives in three states believed that even greater access to peers would be helpful to CCBHC clients. One representative noted, for example, that it would be ideal if anyone

¹⁵ The progress report asked CCBHCs that reported providing telehealth to write in the type(s) of telehealth services it provided. It is unclear whether or how telepsychiatry reported by some clinics differs from telehealth therapy/counseling or medication management written in by clinics.

entering treatment could have access to a certified peer specialist or family support professional if so desired. Another representative conveyed their organization's belief that CCBHCs need to hire at least several peers so that they "can support one another and change the culture in the clinic and change the attitudes towards [sic] positive regarding mental illness and wellness."

E. Care Coordination

The CCBHC certification criteria describe care coordination as the "linchpin" of the CCBHC model. The criteria require CCBHCs to provide integrated and coordinated care that is person and family-centered and addresses all aspects of a person's health. The authorizing statute requires CCBHCs to coordinate care across settings and providers, and to establish partnerships and formal relationships with a range of other providers. CCBHCs must ensure adequate communication and collaboration between and among them, including formal relationships with DCOs. This section summarizes: (1) the types of care coordination relationships CCBHCs had with other providers during the demonstration, including DCOs; and (2) CCBHCs' approaches to information sharing among providers during the demonstration.

1. Relationships with external providers

DCO and non-DCO relationships throughout the demonstration. CCBHCs established formal (that is, non-DCO) and informal relationships with many types of other providers and facilities (Table III.5; see Appendix A, Table A.6 for full results). Nearly all reported an informal or formal relationship with the providers listed in Table III.6 in DY1, with some exceptions: 72 percent (n = 48) have a relationship with an urgent care center, 58 percent (n = 39) with a school-based health center, 48 percent (n = 32) with a rural health center, and 40 percent (n = 27) with Indian Health Services or tribal programs.

As of the DY1 progress report, CCBHCs most frequently relied on DCOs for the provision of suicide/crisis services; otherwise, DCO relationships were not common (Table III.6; see Appendix A, Table A.6 for results from both years). In DY2, DCOs providing suicide/crisis services were still by far the most common type of DCO. In general, social and human service providers such as schools; criminal justice agencies; and employment, older adult, and peer service providers seemed to emerge as increasingly important for DCO relationships, whereas inpatient behavioral health-related facilities were the only type of DCO to decrease in number from DY1 to DY2. However, the findings reported in this paragraph should be interpreted with caution. Although CCBHCs reported that they established formal DCO relationships with a variety of new types of providers, it is unclear how some of these entities (such as criminal justice agencies/courts and mental health/drug courts) could provide CCBHC services on CCBHCs' behalf. In addition, as indicated below, state officials maintained throughout both demonstration years that CCBHCs rarely engaged DCOs and instead preferred to provide CCBHC services directly.

Table III.5. CCBHC Relationships with Other Facilities and Providers in DY1				
	DCO relationship, March 2018		Any relationship, ^a March 2018	
	N	%	N	%
FQHCs	2	3	58	87
Rural health clinics	0	0	32	48
Primary care providers	2	3	66	99
Inpatient psychiatric facilities	1	1	67	100
Psychiatric residential treatment facilities	1	1	64	96
SUD residential treatment facilities	3	4	67	100
Medical detoxification facilities	2	3	64	96
Ambulatory detoxification facilities	1	1	55	82
Post-detoxification step-down facilities	0	0	52	78
Residential (non-hospital) crisis settings	3	4	57	85
MAT providers for substance use	2	3	61	91
Schools	0	0	65	97
School-based health centers	0	0	39	58
Child welfare agencies	0	0	66	99
Therapeutic foster care service agencies	0	0	56	84
Juvenile justice agencies	0	0	60	90
Adult criminal justice agencies/courts	0	0	65	97
Mental health/drug courts	0	0	62	93
Law enforcement	0	0	64	96
Indian Health Service or other tribal programs	0	0	27	40
Indian Health Service youth regional treatment centers	0	0	17	25
Homeless shelters	0	0	59	88
Housing agencies	0	0	64	96
Suicide/crisis hotlines and warmlines	19	28	65	97
Employment services and/or supported employment	2	3	63	94
Older adult services	0	0	56	84
Other social and human service providers	2	3	65	97
Consumer-operated/peer service provider organizations	3	4	55	82
U.S. Department of Veterans Affairs treatment facilities	0	0	66	99
Urgent care centers	0	0	48	72
EDs	2	3	66	99
Hospital outpatient clinics	0	0	62	93
Total CCBHCs	67	100	58	87

Source: CCBHC Annual Progress Report Demonstration Year 1 data, March 2018.

Notes: The denominator for percentages is 67 CCBHCs.

a. "Any relationship" was calculated by combining 3 response options (DCO, formal, and informal) to show whether CCBHCs have established any kind of relationship with external facilities and providers.

b. Thick borders approximately signify the 5 main care coordination groupings from the CCBHC certification criteria: (1) FQHCs, rural health clinics, other primary care providers; (2) inpatient and residential behavioral health treatment; (3) community or regional services, supports, and providers; (4) U.S. Department of Veterans Affairs facilities; and (5) inpatient acute care hospitals. For more information about the grouping of providers/facilities, see the criteria at https://www.samhsa.gov/sites/default/files/programs_campaigns/ccbhc-criteria.pdf, pp. 27-31.

In the first year of the demonstration, state officials offered several reasons for why CCBHCs preferred to provide services directly rather than establish a formal financial relationship with a DCO. CCBHCs' concerns extend to the legal requirements governing and other specifications related to formal DCO agreements, the need to share sensitive information about clients with external providers, and

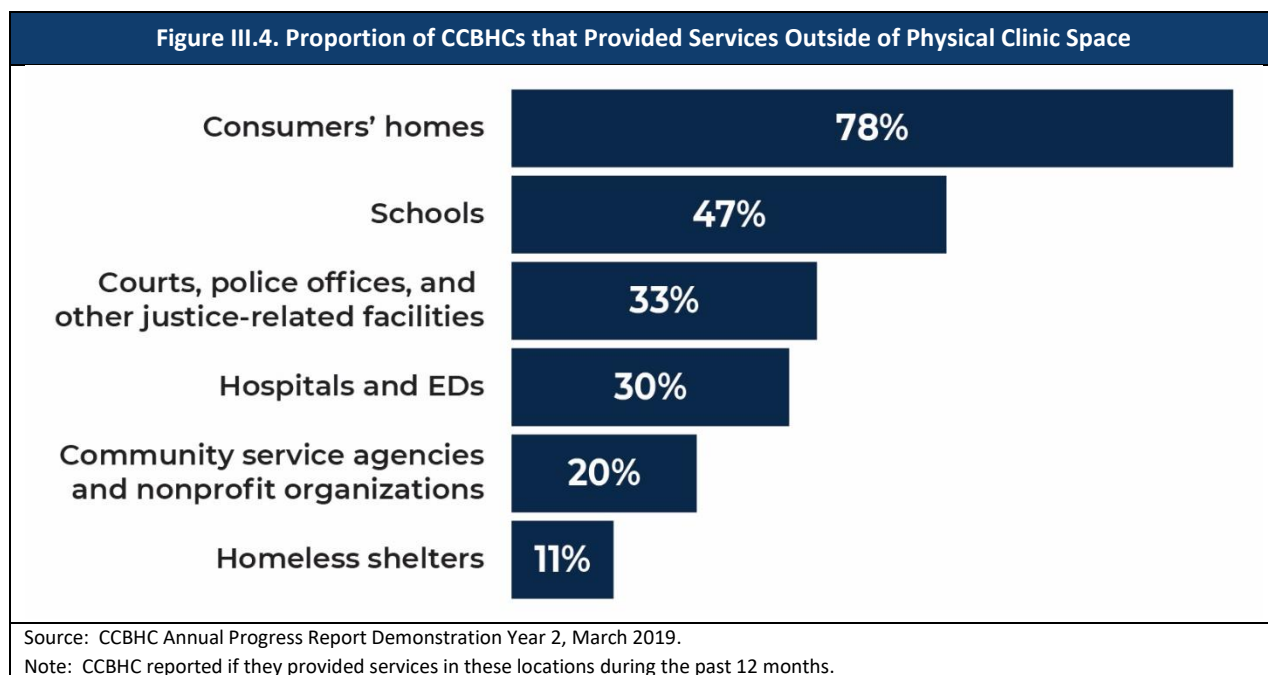
uncertainties about payment through the PPS. Consistent with their perceptions reported during the demonstration's first year, state officials universally indicated in DY2 that DCOs were not an important component of the CCBHC model in their states. Officials reported that most CCBHCs preferred to build and provide the full scope of CCBHC services directly for the following three primary reasons:

- Officials in three states remarked that an overarching deterrent to widespread development of DCO relationships was CCBHCs' reluctance to assume responsibility for the oversight of another provider's services and data. As an official in Minnesota noted, CCBHCs "shied away from wanting to have to hold other organizations accountable for the quality standards and training and everything so chose to develop services they didn't already offer internally."
- Officials also suggested that CCBHCs wished to meet fully all the CCBHC criteria on their own and to develop comprehensive programs themselves. An official in New Jersey perceived that the state's CCBHCs "all truly wanted to meet the requirements and wanted to be the true CCBHC and meet the model...for all the work they were going to have to do to manage the DCO relationship, it was going to be better for their models and financing models to grow their programs in house."
- Officials also cited ongoing concerns about the process for billing for services provided by DCOs. Officials in two states noted that CCBHCs were unfamiliar with and challenged by the provider-to-provider reimbursement arrangement required for DCOs. Setting up agreements and contracts and then adjusting accounting systems to allow for payments to be made to DCOs took time and required significant state oversight and monitoring to ensure compliance with billing requirements.

Officials in three states noted that crisis services were the exception to CCBHCs' reluctance to engage DCOs. In part, the exception reflects the close formal partnerships between CCBHCs and crisis providers that predated the demonstration, thus making reliance on these providers much less complicated and more familiar for CCBHCs.

Delivery of CCBHC services in collateral agencies. CCBHCs reported that they worked with and in a wide variety of facilities and with a wide variety of providers to deliver services to consumers, including social and human service agencies such as schools and shelters. Fifty-five percent of CCBHCs (n = 34) in DY1 and 45 percent (n = 30) in DY2 described delivering services in a wide range of external locations, including schools and shelters, as a way for best reaching clients. Nine percent of CCBHCs (n = 6) reported that they provided services in homeless shelters in DY1, increasing slightly to 11 percent (n = 7) in DY2 (Figure III.4). As mentioned, DCO relationships with schools, school-based health centers, and homeless shelters increased from DY1 to DY2. Outside of formal DCO partnerships, CCBHCs worked with a broad range of facilities and providers, again including schools and shelters (see Appendix A, Table A.6). One CCBHC mentioned that providing services in a variety of locations was central to fostering access and ongoing engagement. For example, case managers and peer specialists meet with clients in their homes or at community locations. In addition, clinic therapists provide services to youth in schools with three groups per week at no cost to those receiving services. Care management staff explained that they occasionally provided community-based services before the clinic became a CCBHC, but, under the demonstration, they increased their efforts to "meet the client where they're at." Staff stressed that service-provision in the community allowed them to establish more trusting relationships with clients while providing opportunities for better understanding clients' family and living environments--which staff would not have fully appreciated if they saw clients only in the clinic. State officials also highlighted several specific efforts to extend the reach of CCBHCs into external organizations, such as the following:

- New York officials discussed efforts to enhance services in schools, noting that CCBHCs “are doing a lot of school-based expansions and establishing satellites in the schools. The school districts want staff on site, so they are supportive, and the relationships are good.” Officials in Missouri also mentioned growth in school-based services throughout the demonstration.
- One Minnesota clinic was able to embed staff at a local library to address mental health challenges for people who are experiencing homelessness and often spend time at the library. The state also reported efforts to develop and embed care coordination staff in locations specific to target populations, such as those in the criminal justice system and tribal populations.
- Officials in three states commented that CCBHCs have made efforts to send a variety of staff (such as peers and care coordinators) into hospitals and crisis centers and to work with first responders to engage clients experiencing crises. An official in Oklahoma, for example, noted that “CCBHCs are getting much more proactive about having staff that go regularly to the crisis centers or urgent care centers so that they can intervene as quickly as possible with their clients who may be going into...to get them out of crisis as quickly as possible. And to go regularly to the hospital...to ensure more smooth transitions.”



2. Provider information sharing

Composition of treatment teams. Most CCBHCs made changes to the composition of their treatment teams as a result of the certification process and then continued to refine the membership of the teams during the demonstration’s second year. In DY1, 76 percent of CCBHCs (n = 51) reported a change in the membership of their treatment teams as a result of the certification process; in DY2, 58 percent (n = 38) reported that members of their treatment teams changed in the last 12 months (Table III.7). The proportion of CCBHCs that changed their treatment teams as a result of certification in DY1 was generally consistent across states; the exception was Missouri, where only about one-third of CCBHCs reported that they made changes. However, state officials in Missouri described well-established care

coordination efforts across the state before the demonstration, perhaps explaining in part the low percentage of changes to treatment teams in the state as a result of certification.

State officials described CCBHCs’ efforts to enhance treatment teams by more successfully incorporating certain provider types. In Nevada, for example, officials described efforts aimed at better integrating psychiatrists into treatment planning and treatment teams as required under the demonstration. Officials noted that, before the demonstration, CCBHCs typically contracted with psychiatrists in private practice for psychiatry services. One official commented that the demonstration has therefore “created a very different utilization of psychiatry by integrating the MD into the therapeutic team.” For most provider types, the proportion of CCBHCs that included certain providers on treatment teams did not change substantially from DY1 to DY2 (Table III.6). However, the proportion of CCBHCs that reported the inclusion of consumers or clients on treatment teams decreased by 10 percentage points and the inclusion of community support and social service providers decreased by 7 percentage points from DY1 to DY2. We have no further information to validate or explain this finding. In Nevada, all the CCBHCs continued to include primary care providers on treatment teams in DY2, whereas the same approach was less common in other states.

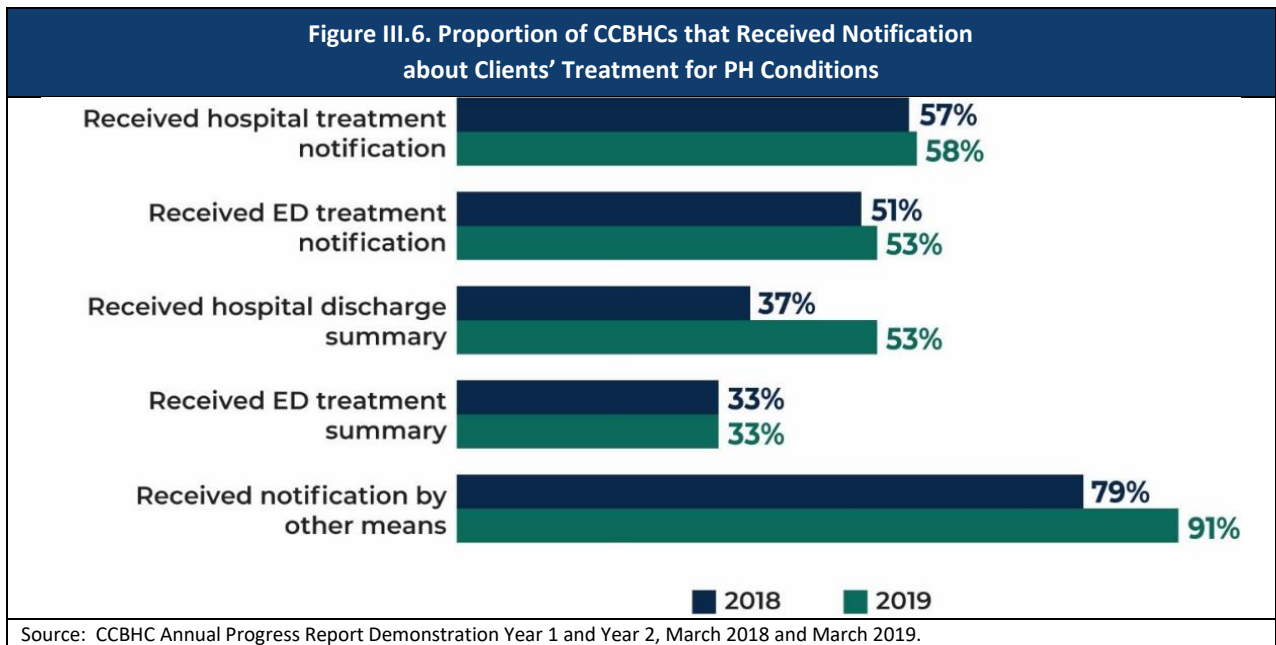
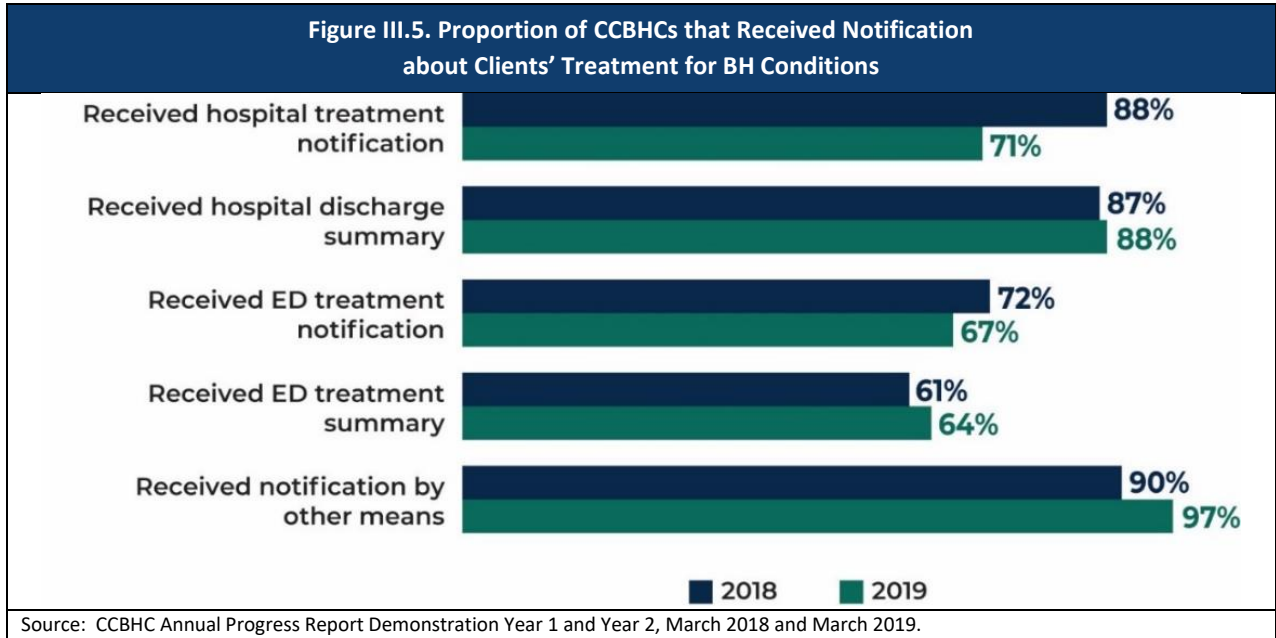
	Number and Proportion of CCBHCs that Included Providers on Treatment Teams, DY1		Number and Proportion of CCBHCs that Included Providers on Treatment Teams, DY2	
	N	%	N	%
Mental health clinicians	67	100	66	100
Case managers	67	100	64	97
SUD treatment providers	66	99	64	97
Psychiatrists	63	94	60	91
Consumers/clients	62	93	55	83
Community support and social service providers	56	84	51	77
Consumer/client family members	52	78	51	77
PCPs	36	54	32	48
Other:	31	46	36	55
Peer support staff	13	19	19	29
Family support providers	5	8	3	5
Nursing staff	5	8	13	20
Care coordinators	3	5	3	5
Guardians	2	3	3	5
School staff	1	2	4	6
Corrections staff	0	0	3	5
Total CCBHCs	67	100	66	100

Source: CCBHC Annual Progress Report Demonstration Year 1 and Year 2, March 2018 and March 2019.

CCBHCs reported that a wide range of “other” types of providers and partners participated in treatment teams in both years of the demonstration (Table III.6). The findings underscore the importance of these various provider types in CCBHCs’ delivery of services, which seems to have grown as the demonstration progressed. Consistent with these findings, and as noted in previous sections, officials in most states mentioned the crucial role played by peers on treatment teams.

Provider notifications. Clinics reported on whether they received notification of clients’ treatment for physical and behavioral health conditions by some mechanism. In both years, CCBHCs more often

received notifications about clients’ treatment at external facilities for behavioral health conditions than for physical health conditions (Figures III.5 and III.6). However, the rate of notifications about treatment for physical health conditions increased between DY1 and DY2, whereas some notifications for treatment for behavioral health conditions declined.



Over 90 percent of CCBHCs reported that they received notifications by “other means” when their clients were treated for either behavioral health (97 percent of CCBHCs, n = 64) or physical health conditions (91 percent, n = 60) in DY2. The figures represent an increase of 9 percentage points for behavioral health conditions and 13 percentage points for physical health conditions from DY1 (Figures III.5 and

III.6). A new progress report question in DY2 allowed CCBHCs to describe these “other means” (not shown in the figures). By far the most common were direct reports by clients (33 percent, n = 22) and clients’ families (38 percent, n = 25). Other notification sources included clients’ primary care physicians (PCPs) and other providers (12 percent, n = 8), corrections and law enforcement officers (9 percent, n = 6), crisis centers including crisis DCOs (6 percent, n = 4), and insurance agencies (6 percent, n = 4).

Although not a widespread practice, officials in some states described state-wide efforts to use HIT to alert CCBHCs about CCBHC clients’ use of other health care services. For example, in Missouri, the state Medicaid agency provides CCBHCs with lists of their clients with Medicaid who are hospitalized once Medicaid is notified via authorization. In New Jersey, CCBHCs (and other providers) receive Admission, Discharge, Transfer alerts electronically when a client is admitted to a hospital, transferred to another facility, or discharged from the hospital, thereby allowing CCBHCs to follow up with clients while in the hospital or shortly after discharge.

Use of EHRs/HIT to share information. A majority of CCBHCs made changes to their EHR or HIT systems as a result of the CCBHC certification process and during the demonstration period. As of the DY1 progress report, 97 percent of CCBHCs (n = 65) reported that they altered their EHR or HIT systems to meet CCBHC certification, and 33 percent (n = 22) adopted a new EHR or HIT system as part of the CCBHC certification process. As of the DY2 progress report, 67 percent of CCBHCs (n = 44) reported that they modified their EHR or HIT systems in the past 12 months. The CCBHCs demonstrated wide variation in the functionalities of their EHR systems, although those functionalities did not change in any meaningful way over time. All CCBHCs reported that their EHRs included mental health, SUD, and case management or care coordination records in both DY1 and DY2. (For most CCBHCs, these features were not new as a result of CCBHC certification.) Quality measure reporting capability, generation of electronic care plans, and electronic prescribing were also available in over 90 percent of CCBHCs in both years. Less common EHR features in both years included the incorporation of primary care records, the ability to communicate with laboratories to request tests or receive results, and the capacity for electronic exchange of clinical information with DCOs or other external providers.

Officials in several states cited EHRs and other HIT systems as central facilitators of care coordination, noting, for example, that the integration of treatment plans and physical and behavioral health care records has enabled providers to engage in improved communication about a client’s care. In Minnesota, officials reported that CCBHCs “retooled all of their EHRs so that they could do integrated treatment planning and assessments and be able to have multidisciplinary teams be able to chart on a client and read material on a client across multiple service lines, and that’s not generally how EHRs are designed.”

Further, some states and clinics have added population health management functionalities into their EHRs to facilitate better care coordination. Officials in Oklahoma, for example, described how one CCBHC developed and used a one-page CCBHC consumer “report card,” accessible to staff, that shows laboratory results, medication compliance, the number of services received, and screenings for a given consumer. The report cards assign a grade to the agency on how well the services provided to each CCBHC consumer are coordinated, with those results also available to all staff involved in the individual’s care.” Similarly, a CCBHC in another state described developing an algorithm to classify clients into four levels of risk based on a client’s biopsychosocial factors as part of the CCBHC demonstration. The risk score was documented in the client’s health records and then used to identify clients in need of more intensive services and/or care coordination. The risk-stratification process allowed the clinic to assign clients to the care team that best meets their particular care needs and guided the teams’ care decisions related to each client. Stratification also allowed staff to enhance services to meet the needs of high-risk clients and

proactively identify moderate-risk clients. Staff also used the risk categories to tailor care coordination to clients' needs. For example, clients considered "high-risk" received high priority in treatment team discussions, leading to enhanced care management for those clients. As one provider noted, "The meetings to discuss the groups of consumers, especially the high-risk group, bring together providers from the multiple locations--and consumers may get services from the multiple service locations--so that helps us provide person-centered care."

IV. QUALITY OF CARE PROVIDED TO CERTIFIED COMMUNITY BEHAVIORAL HEALTH CLINIC CLIENTS

Quality measure reporting provided clinics and state officials with standardized metrics to monitor the quality of care and inform quality improvement efforts. Quality measure reporting also has an important role in the context of the PPS. CCBHC payments were not linked to the provision of individual services. Rather, CCBHCs were paid the same amount regardless of the specific services they provided during the visit-day or visit-month. In this context, quality measurement provides a mechanism to ensure that quality of care does not suffer. Some states also used the quality measures to award QBPs to CCBHCs that met state-specified performance thresholds. This chapter describes CCBHCs' and states' experiences reporting the measures, performance on the measures in each demonstration year, and the extent to which CCBHCs received QBPs.

A. Experience with Measures

Historically, reporting of standardized quality measures by CMHCs and other behavioral health care providers has lagged other areas of health care (Seibert et al. 2015) due to the lack of well-accepted validated measures and the inability of data systems to capture and report this information (Pincus et al. 2017; Ranallo et al. 2016). Inconsistent reporting of standardized quality measures among behavioral health care providers has limited the development of value-based payment systems that rely on these measures to incentivize and financially reward high-quality behavioral health care. In the context of such payment systems, these measures allow providers flexibility to tailor services to their clients while maintaining accountability for the care they provide. The CCBHC certification criteria included requirements for clinics and states to report standardized quality measures that went beyond their usual practices and reporting capacities prior to the demonstration.

The CCBHC criteria specify the 21 quality measures that clinics and states were required to report for the demonstration. These measures assess performance across nine domains or conceptual areas of quality (for example, access to care, medication management and adherence, etc. See Appendix Tables B.1 and B.2 for list of measures, the mapping of these measures to domains, and measure specifications). Nine of the measures are reported by CCBHCs using clinical data typically derived from EHRs or other electronic administrative sources. The other 12 measures are reported by states using Medicaid claims and managed care encounter data and surveys of CCBHC clients and family members. Most of the required clinic-reported measures focus on processes within the clinic, such as whether screening and services were provided and time to initial evaluation; one measure, remission from depression, pertains to treatment outcomes. Several of the state-reported measures also assess processes of care but include services that were delivered outside of the CCBHC. For example, measures of follow-up after hospitalization captured if the CCBHC or other providers in the community delivered care after discharge. HHS also requires CCBHCs to report the housing status of CCBHC clients, but we could not use this as a quality measure.¹⁶

SAMHSA provided states and CCBHCs with the measure specifications for this demonstration. Several of these measures were originally developed for health plan or state-level reporting (for example,

¹⁶ For most CCBHCs, housing status was reported for clients once per demonstration year, without information on individual change in status or the timing of when this was measured. This limitation made it impossible to interpret these reports as quality measures.

reporting by state Medicaid programs). SAMHSA adapted the measures for the demonstration to report performance for CCBHCs and the populations they serve.

State officials and CCBHCs reported making considerable investments into building the capacity of CCBHCs to capture the data elements necessary to calculate the measures (Breslau et al. 2019). Most CCBHCs made changes to their EHR systems to facilitate reporting the measures, and some of those changes extended into the first year of the demonstration. While these changes were in progress, CCBHCs developed ad hoc data collection procedures, often involving paper records and manual data entry.

In addition to changing their data systems, CCBHCs modified some clinical practices over time to facilitate quality measure data collection and reporting. For example, CCBHCs often modified care processes to incorporate screening tools that provided data for the measures but also informed treatment decisions. Several CCBHCs reported implementing standard screening tools such as the SRA and the Patient Health Questionnaire-9 (PHQ-9). CCBHCs reported that—even in instances where similar screening tools had previously been used as part of clinical practice—they had taken steps to modify and standardize protocols for administering and recording data from screenings in electronic databases. These modifications coincided with staff trainings, upgrades to data systems, and more frequent internal review and audits of clinic data to ensure accuracy and monitor service delivery patterns.

State officials reported few difficulties with calculating state-reported measures, which may have been due, in part, to the fact that most of those measures use claims data and some states were accustomed to calculating the measures for other reporting programs. CCBHCs experienced some challenges reporting specific measures but they were mostly idiosyncratic to CCBHCs or measures. However, several state-level stakeholders and CCBHCs reported challenges capturing the information necessary to calculate the Depression Screening, Follow-Up, and Remission (DEP-REM-12) measure and some states provided technical assistance to CCBHCs to address those challenges. Specifically, officials in some states reported that some CCBHCs had encountered difficulties extracting data from EHRs for the depression remission measure. State officials and CCBHCs reported that they continued to struggle to report this measure into the second demonstration year.

Although the CCBHC demonstration did not require CCBHCs to use quality measure data to inform internal quality improvement activities, 89 percent (n = 59) of CCBHCs reported using quality measures to improve clinical practice in the second demonstration year. As reported in our interim evaluation reports (Breslau et al. 2020a, 2020b), several CCBHCs reported using the quality measure data to routinely monitor performance and progress toward clinic-specific goals (for example, decreasing time to initial evaluation; staff training initiatives related to suicide screening and prevention). State officials also used the measures to identify technical assistance needs of individual CCBHCs. Some states also developed systems for sharing quality measure performance with individual clinics or with the entire group of clinics in the state, so that CCBHCs could understand their own performance relative to other CCBHCs in the state.

B. Quality Measure Performance

Seven of the eight demonstration states submitted quality measure performance data in both demonstration years.¹⁷ For most measures, states and CCBHCs did not report making major deviations from the measure specifications provided by HHS when reporting the measures. There were, however,

¹⁷ Nevada submitted five of the required measures in DY1 but did not submit any of the required measures in DY2.

some deviations that resulted in excluding some CCBHCs from the analysis of some measures (Appendix Table B.3). These deviations typically involved the use of different look-back periods or timeframes to specify eligible clients included in the numerator or denominator for a measure. In most instances, these deviations were idiosyncratic and affected individual CCBHCs for specific measures. In one instance, all CCBHCs in Oregon used a different specification to calculate the denominator for the measure on Follow-up Care for Children Prescribed Attention Deficit Hyperactivity Disorder (ADHD) Medication (ADD-BH); for this measure, all Oregon CCBHCs were excluded from analysis. In addition, we excluded a state or CCBHC from the analysis of a specific measure when the denominator included fewer than 30 clients.

This chapter summarize measure performance for each year of the demonstration. We report aggregate performance across all CCBHCs and at the state level and describe overall trends and variability across states. Given the modest number of states and CCBHCs, our analyses were intended to characterize overall performance on quality measures during the demonstration rather than to assess statistically significant changes in performance over time. Some findings in this chapter may differ slightly from findings in our interim evaluation report (Breslau et al. 2020) because states had an opportunity to submit corrected or updated DY1 quality measure performance with their DY2 measures. In addition, the analysis in this report is limited to states and CCBHCs that reported measures in both demonstration years, whereas our interim report summarized performance for only the first year due to the availability of data at that time. As a result, there were a few instances in which a state reported a measure in DY1 but not DY2, or we excluded a state that reported the measure in DY2 but the denominator size was too small or the state made a deviation from the measure specifications that prevented comparisons across years.

Limits on the interpretation of measure benchmarks. Where possible, we compared performance on the measures among CCBHC populations with performance benchmarks on the same or similar measures from the following sources: (1) state-level Medicaid Core Set measures (CMS 2019a, 2020); (2) Medicare Merit-based Incentive Payment System (MIPS) measures (Quality Payment Program 2019); (3) Minnesota Community Measurement (MNCM; MN Community Measurement 2019); and (4) state-level performance on the Mental Health Statistics Improvement Program (MHSIP) survey (SAMHSA 2019). While these sources provide context for interpreting performance on the measures among CCBHC populations, there are several limitations to these comparisons and readers should not necessarily interpret differences in CCBHC performance relative to these sources as evidence of CCBHC success or failure.

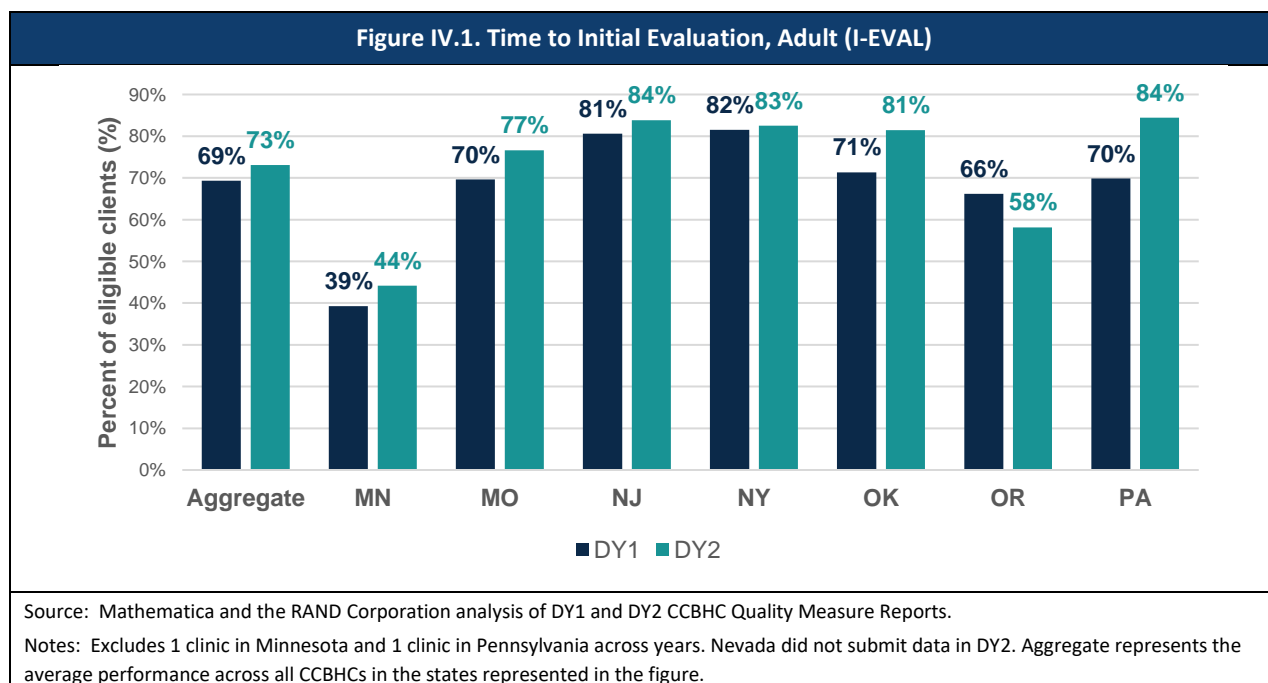
First, the populations reflected by the CCBHC measures often differ from the populations reflected in the benchmarks. For example, the benchmark for the depression remission measure is calculated from a state-wide population of individuals who receive treatment in a wide range of specialty and primary care settings. The state-wide population is more heterogenous than the CCBHC population in initial depression severity and other characteristics that account for differences in measure performance. We would expect that the differences in the client populations would lead to differences between the CCBHCs and the benchmarks. We do not have individual-level data to compare across client populations or to statistically adjust for differences in client populations. Likewise, MIPS measures are reported using clinician-reported data from providers who exceed certain criteria (“low-volume threshold”) with respect to Medicare-covered services that they provide and the number of Medicare patients that they serve. However, Medicare beneficiaries (people age 65 or older; people under age 65 with certain disabilities; people with end-stage renal disease) may differ from CCBHC client populations. Such differences in the underlying populations represented by the measures may account for some differences in measure performance.

Second, states vary widely with respect to the measure denominators (sample sizes of eligible clients or visits on which performance is based). Although we do not report state performance on measures if the denominator size is less than 30 clients, precision in measure performance is likely lower for states with smaller denominators.

Third, there are some differences between some CCBHC measure specifications and existing benchmarks. In some cases, including Initiation and Engagement of Alcohol and Other Drug (AOD) Abuse or Dependence and Follow-Up After Hospitalization for Mental Illness: Age 21 and Older, CMS specifications for Medicaid Core Set measures changed over time, but the changes were not made to the specifications for the CCBHCs, presumably to reduce the burden on clinics and ensure comparability within clinics over time (CMS 2019b). This change led to some variation between the demonstration measures and the benchmarks. For example, following the CCBHC specifications, Initiation and Engagement of Alcohol and Other Drug Dependence Treatment (IET-BH) was reported separately for two age groups, those age 6-20 and those age 21 and over, whereas the Medicaid Core Set measure is reported for those age 6-17 and those age 18 and over.

1. Quality Domain 1: Access to care/timeliness of initial evaluation

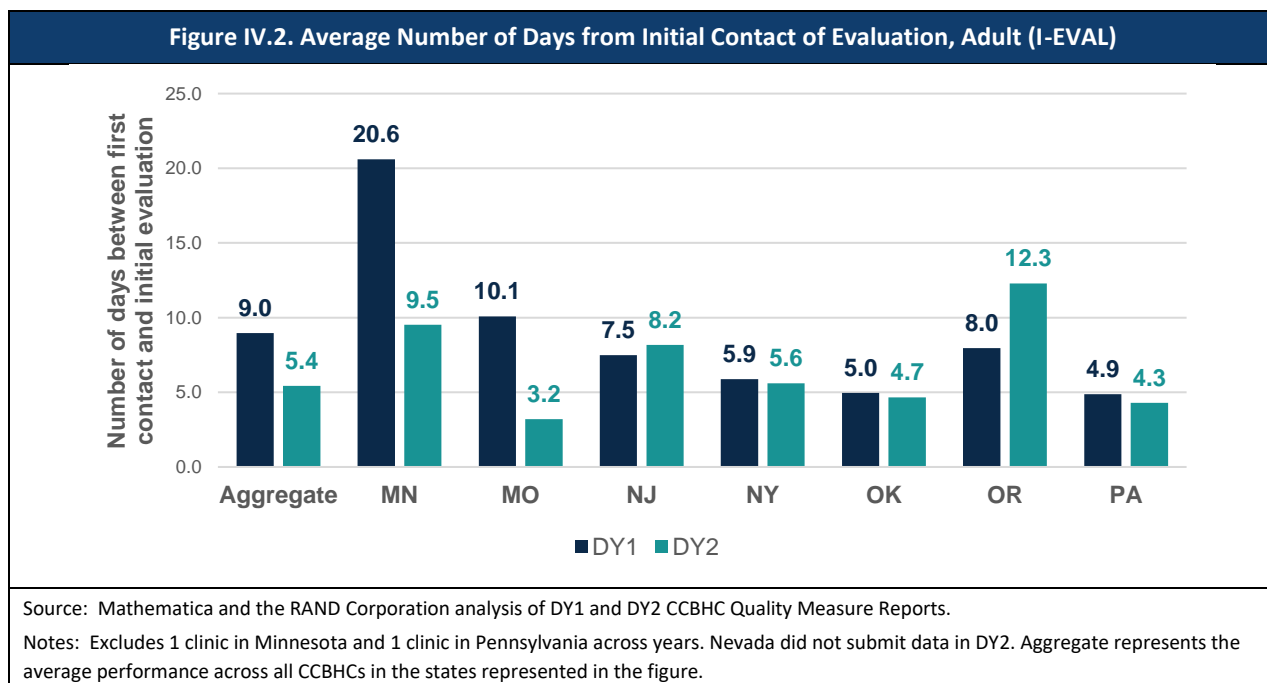
The time between initial contact with the clinic and evaluation is a key metric of access to care. Longer wait-times for psychiatric evaluation are associated with poorer client engagement and retention in treatment and reduced satisfaction with care, which can contribute to poorer treatment outcomes (Redko et al. 2006; Ho et al. 2015; Beetham et al. 2019). The required CCBHC-reported measure (Time to Initial Evaluation measure, or I-EVAL) includes two components: (1) the percentage of new clients who received an initial evaluation within ten business days of first contact with the clinic; and (2) the mean number of days until that initial evaluation for new clients.



Across states, 69 percent of new adult clients received an initial evaluation within ten days of first contact with the clinic in DY1 (ranging from 39 percent in Minnesota to 82 percent in New York). In the

aggregate, there was a 4-percentage point improvement in performance from DY1 to DY2, with improvements occurring in six of the seven states (Figure IV.1). Results were similar for adolescents (see Appendix B, Table B.5).

Time to initial evaluation improved during the demonstration. On average, adults received an initial evaluation within nine days of contact with the CCBHC in DY1, which decreased to 5.4 days in DY2 (Figure IV.2). All states except New Jersey and Oregon demonstrated this pattern of improvement. Results were similar for adolescents (see Appendix B, Table B.5).



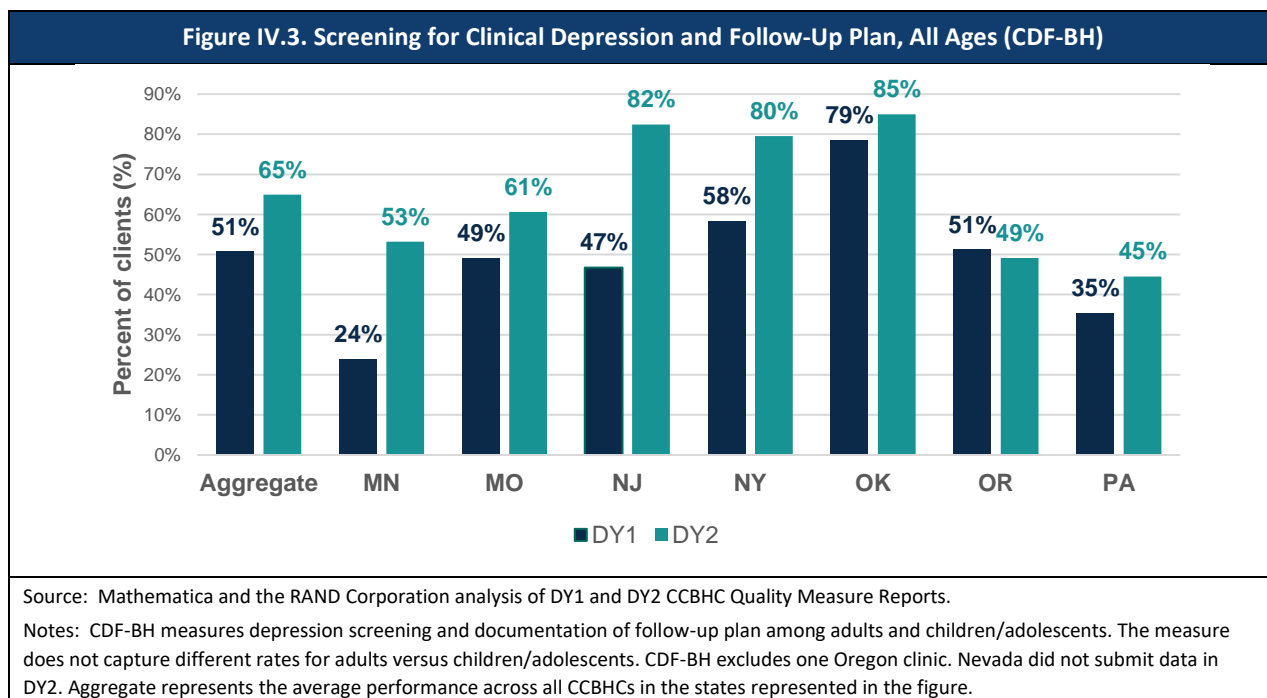
2. Quality Domain 2: Depression and suicidality screening and follow up

Depression is a highly prevalent condition in both youths and adults (SAMHSA 2020c) and imposes significant societal and personal costs, which may include increased risk of suicide thoughts/ideation, attempts, and death by suicide (Ribeiro et al. 2018). Several interventions have been shown to reduce symptoms of depression and can help mitigate these potentially serious consequences. Screening for depression symptoms is essential for identifying those who may benefit from treatment, initiating timely and appropriate care, and monitoring response to treatment (American Psychiatric Association 2010). Screening for suicide risk is similarly important for efforts to prevent suicide (Velupillai et al. 2019; WHO 2014). CCBHCs reported four measures to assess care for depression and suicide risk: Screening for Clinical Depression and Follow-Up Plan (CDF-BH) for all clients ages 12 and above; Depression Remission at Twelve Months (DEP-REM-12); Child Suicide Risk Assessment (SRA-BH-C) for children/adolescents with major depressive disorder; and Adult Suicide Risk Assessment (SRA-A) for adults with major depressive disorder.¹⁸

Performance on CDF-BH improved during the demonstration (Figure IV.3). Across states, CCBHCs screened 51 percent of clients age 12 and above for depression and documented a follow-up plan (on the

¹⁸ Medicaid Core Set benchmarks are not available for these measures; instead, benchmarks are taken from data on comparable measures in the Medicare MIPS (CDF-BH, SRA-BH-C, SRA-A) and MNCM (DEP-REM-12).

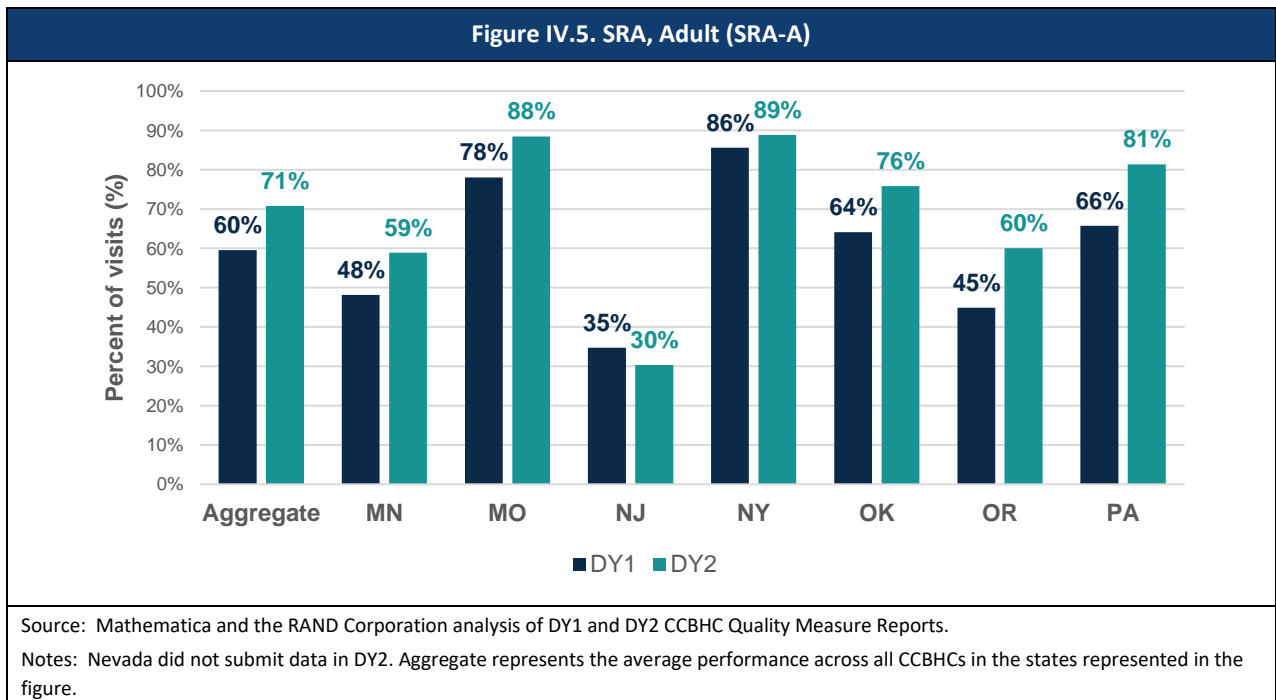
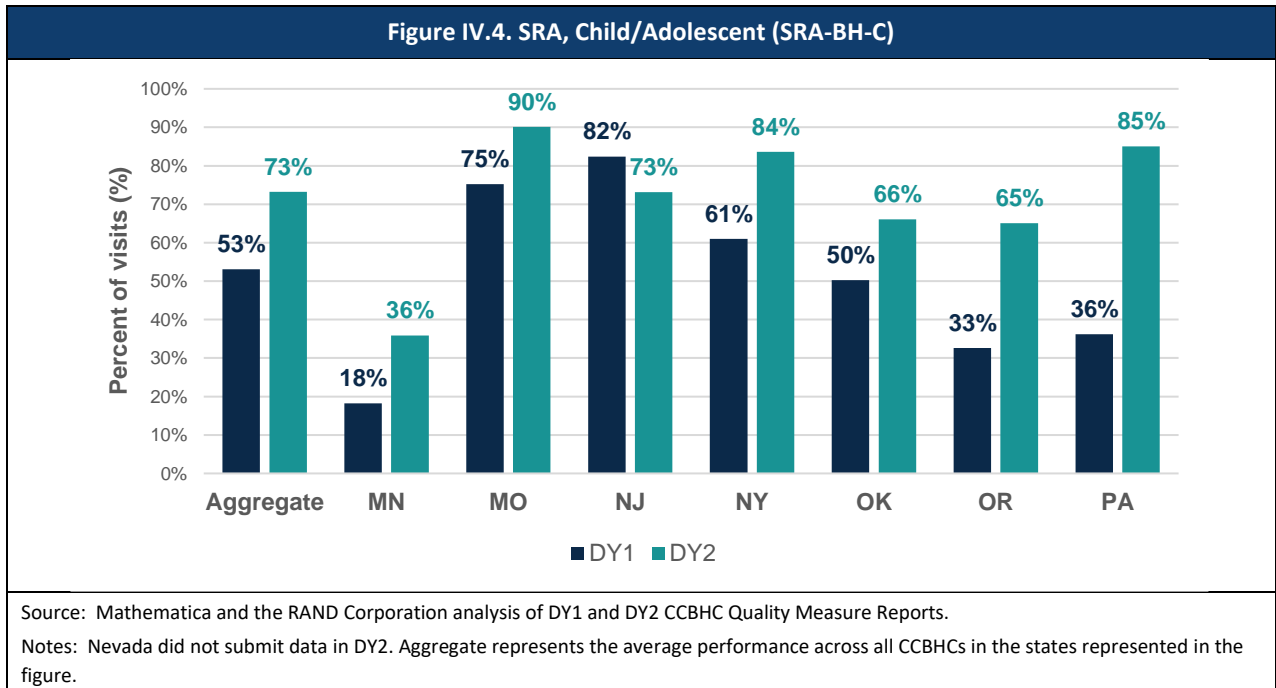
same date of the screen) if depression screening was positive in DY1; screening increased to 65 percent in DY2. All states improved on this measure except Oklahoma, which showed a slight decrease from DY1 to DY2 (51 percent to 49 percent, respectively). Aggregate performance across states was substantially higher than the 28 percent performance rate on a comparable measure from MIPS. However, this is an imperfect comparison because the Medicare population may be different from CCBHC clients and MIPS reporting is not limited to behavioral health providers.



Across states, 8 percent of CCBHC clients with depression had evidence of the remission of depression symptoms within 12 months in DY1 and 6 percent had evidence of remission in DY2 (see Appendix B, Table B.9). Although aggregate performance on the depression remission measure was low in both demonstration years, it was comparable to the 7 percent average performance rate available from MNCM. The low performance on this measure may reflect CCBHCs’ challenges with readministering the PHQ-9 at multiple time-points within the required timeframe specified for this measure and/or difficulty extracting follow-up data from EHRs needed to define depression remission. For example, in the second demonstration year, some state officials reported that some CCBHCs had reported ongoing challenges with calculating depression remission rates due to difficulties with extracting necessary information from EHRs. Performance varied substantially by state. Performance in DY2 ranged from 2 percent in Oregon to 18 percent in New York. States also varied with respect to year-to-year changes; New York demonstrated substantial improvement (an increase of 7 percentage points) and Oklahoma and Pennsylvania demonstrated more modest improvements, whereas performance worsened over time in Minnesota, Missouri, and Oregon. It is unclear if changes in performance over time may have been driven by changes in the processes or systems used to collect data for this measure, as some clinics were continuing to modify their EHRs and/or implement new depression assessment and follow-up protocols into the second demonstration year.

CCBHCs conducted a SRA for 53 percent of all visits with children/adolescents who had a diagnosis of major depressive disorder in DY1 and 73 percent of visits with these children/adolescents in DY2 (Figure

IV.4). Although Medicaid Core Set benchmarks are not available for this measure, performance was substantially higher than benchmark performance (23 percent) on the comparable measure from 2019 MIPS data.



CCBHCs conducted a SRA for 60 percent of visits for adults with a new or recurrent episode of major depressive disorder in DY1 and 71 percent of these adults in DY2 (Figure IV.6). Performance on this

measure was also higher than the comparable adult measure from the 2018 MIPS data (66 percent). The rates of suicide risk assessment for both adults and children/adolescents varied widely by state, but all states except New Jersey demonstrated improvement from DY1 to DY2.

In summary, performance on these measures was generally either stable or improved from DY1 to DY2 (Figure IV.6).

Figure IV.6. Change in Measure Performance from DY1 to DY2 for Depression and Suicidality Screening and Follow-Up Measures							
Measure	MN	MO	NJ	NY	OK	OR	PA
Child and Adolescent Major Depressive Disorder: SRA (SRA-BH-C)							
Adult Major Depressive Disorder: SRA (SRA-A)							
Screening for Clinical Depression and Follow-up Plan (CDF-BH)							
Depression Remission at 12 Months (DEP-REM-12)			n/a				

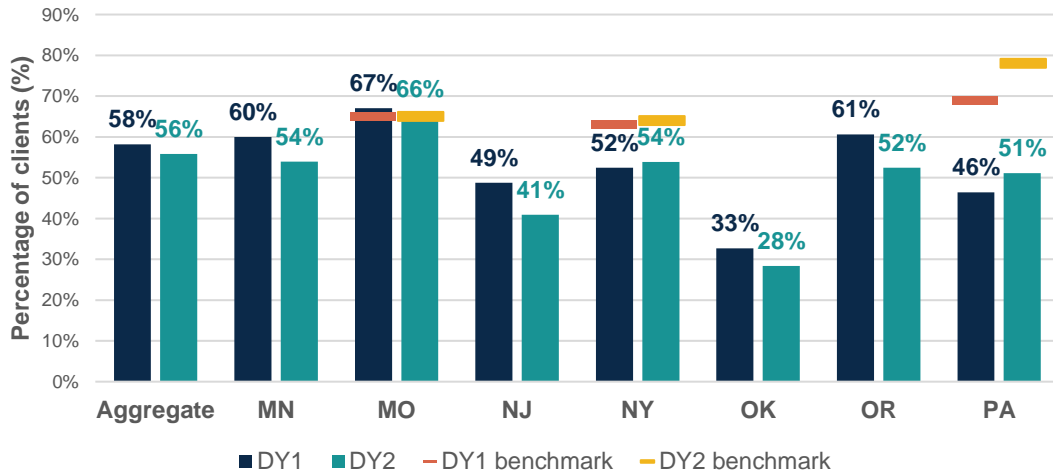
Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 CCBHC Quality Measure Reports.
 Notes: Improved or declined was defined as greater or equal to 5% increase or decrease, respectively, in aggregate performance across all CCBHCs in the state from DY1 to DY2. Stable was defined as less than a 5% change in aggregate performance from DY1 to DY2.
 Improved. Declined. Stable.

3. Quality Domain 3: Psychiatric medication management and adherence

Better client adherence to a psychiatric medication regimen (that is, taking medications as prescribed) is associated with improved treatment outcomes (NCQA 2021; Lacro et al. 2002; Julius et al. 2009). Medication non-adherence is common, however, and may increase risk for negative outcomes in some individuals, such as relapse and hospitalization (Hassan et al. 2009). States reported adherence to antipsychotic medications for CCBHC clients with schizophrenia (Adherence to Antipsychotics for Individuals with Schizophrenia measure, or SAA-BH) and adherence to antidepressant medication in clients with major depression (AMM-BH). Across states, 58 percent of adult CCBHC clients with schizophrenia who received antipsychotic medications continued these medications for at least 80 percent of the days they were enrolled in Medicaid during DY1 (Figure IV.7). Performance on this measure in DY1 ranged from 33 percent in Oklahoma to 67 percent in Missouri. Performance on this measure from DY1 to DY2 was stable for New York and Missouri, improved for Pennsylvania, and worsened for Minnesota, New Jersey, Oklahoma, and Oregon. For the three states that had Medicaid Core Set benchmarks for this measure in DY2, Minnesota demonstrated comparable performance to the benchmarks, whereas New York and Pennsylvania performed worse than their state-level benchmarks.

Across states, 52 percent of adult CCBHC clients with major depression who received antidepressants continued their antidepressants for at least 12 weeks (acute phase; see Appendix B, Table B.11), and 37 percent for at least six months in DY1 (continuation phase) (Figure IV.8). State-level performance for these measures were stable from DY1 to DY2, except for Pennsylvania (which had a 6 percent improvement for both measures) and Oklahoma (which had a 5 percent decline in the acute phase measure but a 2 percent improvement in the continuation phase measure; see Appendix B, Table B.11). For states with benchmarks in DY2, state performance was comparable to the state-level benchmarks, except for Oklahoma (for the acute phase measure) and Minnesota and Oklahoma (for the continuation phase measure).

Figure IV.7. Adherence to Antipsychotic Medications for Individuals with Schizophrenia (SAA-BH)

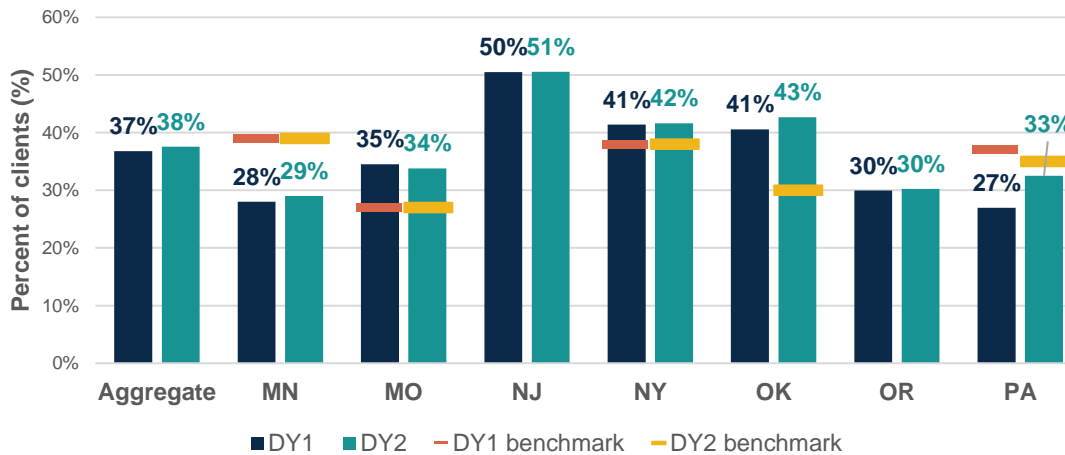


Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Nevada did not submit data in DY2. Benchmarks from the Annual Reporting on the Quality of Care for Adults in Medicaid (FFY 2018 for DY1 and FFY 2019 for DY2), available at <https://www.medicaid.gov/medicaid/quality-of-care/performance-measurement/adult-and-child-health-care-quality-measures/adult-core-set/index.html>.

Aggregate represents the average performance across all CCBHC clients in the states represented in the figure.

Figure IV.8. AMM, Continuation Phase, Adult (AMM-BH cont.)



Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Nevada did not submit data in DY2. Benchmarks from the Annual Reporting on the Quality of Care for Adults in Medicaid (FFY 2018 for DY1 and FFY 2019 for DY2), available at <https://www.medicaid.gov/medicaid/quality-of-care/performance-measurement/adult-and-child-health-care-quality-measures/adult-core-set/index.html>.

Aggregate represents the average performance across all CCBHC clients in the states represented in the figure.

Denominators for some of these measures were small. For example, for Adherence to Antipsychotics for Individuals with Schizophrenia, the overall denominator accounted for approximately 5 percent of adult CCBHC clients in DY1. By comparison, based on national Uniform Reporting System (URS) data from

fiscal year 2018, approximately 13.5 percent of adults who received community mental health services had a diagnosis of schizophrenia or a related disorder (SAMHSA 2019). We would have expected the denominator to be larger given that CCBHCs serve individuals with SMI, but we do not have data on clients' diagnoses to explain this discrepancy.

In summary, performance on these measures generally remained stable or declined from DY1 to DY2 (Figure IV.9).

Figure IV.9. Change in Measure Performance from DY1 to DY2 for Psychiatric Medication Management and Adherence Measures							
Measure	MN	MO	NJ	NY	OK	OR	PA
Adherence to Antipsychotic Medications for Individuals with Schizophrenia (SAA-BH)							
Antidepressant Medication Management (AMM-BH)							

Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 CCBHC Quality Measure Reports.
Notes: Improved or declined was defined as greater or equal to 5% increase or decrease, respectively, in aggregate performance across all CCBHCs in the state from DY1 to DY2. Stable was defined as less than a 5% change in aggregate performance from DY1 to DY2.
 Improved. Declined. Stable.

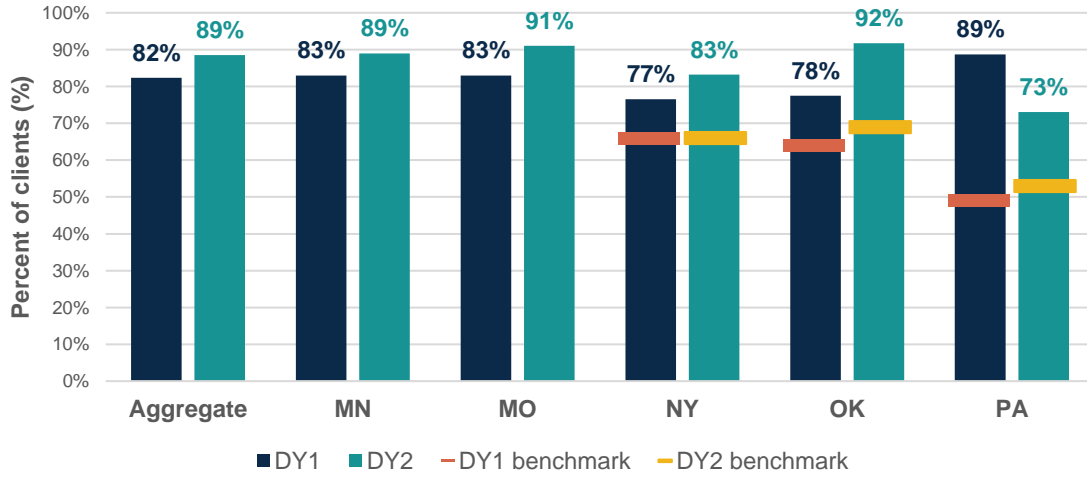
4. Quality Domain 4: Follow-up and medication management for children/adolescents with ADHD

ADHD is a common mental health condition among children and adolescents (Visser et al. 2014), for which medication is an important and commonly used component of treatment. Routine monitoring and follow-up care for children who are prescribed medication for ADHD is important for ensuring high-quality care. Assessing prescribing and management of ADHD medication for children/adolescents for CCBHCs is important, particularly in the context of child psychiatrist provider shortages throughout much of the United States (American Academy of Child and Adolescent Psychiatry 2018; University of Michigan 2018). States reported the extent to which children/adolescents prescribed medications to treat ADHD received follow-up care (Follow-Up Care for Children Prescribed ADHD Medication measure or ADD-BH).

Across states, 67 percent of children/adolescents with ADHD who received care from CCBHCs had a follow-up visit with a provider with prescribing authority within 30 days after the initiation of an ADHD medication (initiation phase; see Appendix B, Table B.13). Among those children/adolescents who had a follow-up visit with a provider with prescribing authority within 30 days after initiation of the medication, 82 percent had at least two follow-up visits with any provider in the first nine months after initiating a new ADHD medication (continuation phase) in DY1, which increased to 89 percent in DY2 (Figure IV.10).

Among the states that reported these measures in both years, performance on the initiation phase measure improved in two states (Minnesota and Oklahoma), declined in Pennsylvania, and was stable in Missouri and New York (see Appendix B, Table B.13). In contrast, performance improved for all states except Pennsylvania on the continuation phase measure. Only three states (New York, Oklahoma, and Pennsylvania) had Medicaid Core Set benchmarks for these measures in DY2, and CCBHC performance in all of these states exceeded the benchmarks.

Figure IV.10. Follow-Up Care for Children Prescribed ADHD Medication (ADD-BH)



Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Nevada did not submit data in DY2. Oregon excluded due to deviation. New Jersey excluded due to combined state denominator <30 in DY1. Denominators for the Initiation Phase of the measure are systematically smaller than Continuation and Maintenance Phase denominators. Benchmarks from the Annual Reporting on the Quality of Care for Children in Medicaid (FFY 2018 for DY1 and FFY 2019 for DY2), available at <https://www.medicaid.gov/medicaid/quality-of-care/performance-measurement/adult-and-child-health-care-quality-measures/adult-core-set/index.html>.

Aggregate represents the average performance across all CCBHC clients in the states represented in the figure.

In all states but Missouri, the state-level denominator for these measures in DY1 ranged from 80 to 349 children/adolescents (the denominator was 1,605 in Missouri). The aggregate sample (n = 2,420) of children/adolescents included in the denominator for the measure represented less than 4 percent of all children/adolescents served in CCBHCS in DY1, and Missouri accounted for over half of the denominator across states. We would have expected the denominator to represent a larger proportion of children/adolescents given the prevalence of ADHD: approximately 8 percent of children ages 2-17 in the United States had a current diagnosis of ADHD based on data from the 2016 National Survey of Children’s Health (Danielson et al. 2018). However, the number of children/adolescents included in this measure would likely not reflect all children/adolescents with ADHD because the measure is limited to only individuals with “new” prescription events and only children age 6-12.

5. Quality Domain 5: Physical health care

Obesity/overweight status and related metabolic conditions (for example, diabetes) are important contributors to morbidity and mortality and individuals who take antipsychotic medications are at elevated risk for metabolic conditions (McEvoy 2005). Routine monitoring of client weight or body mass index (BMI; a commonly used metric used to determine weight-related risk status) and screening for metabolic conditions among all clients is important for identifying individuals who may benefit from intervention (for example, to reduce their weight) (NCQA 2021b). Given the elevated risk of metabolic conditions resulting from the use of antipsychotic medications, screening for diabetes among individuals with schizophrenia or bipolar disorder who take these medications is important for treatment planning and monitoring and reducing risk (for example, by adjusting psychiatric medications that may be contributing to the problem) (NCQA 2021c). CCBHCs reported: (1) the proportion of adults screened for BMI and, if BMI was elevated, the proportion for whom a follow-up plan was documented; and (2) the proportion of

children/adolescents for whom they documented BMI percentile. States reported the proportion of adult CCBHC clients with schizophrenia or bipolar disorder receiving antipsychotic medications who were screened for diabetes.

- Across states, CCBHCs documented BMI screening and follow-up plans (if BMI was outside of normal parameters) for 50 percent of adult clients in DY1 and 64 percent in DY2 (see Appendix B, Table B.15). Performance on this measure improved from DY1 to DY2 for all states. DY2 performance was comparable or higher than the MIPS 2018 benchmark rate of 45 percent for all states except Minnesota.
- Across states, CCBHCs documented the BMI percentile for 59 percent of children/adolescents in DY1 and 74 percent in DY2 (see Appendix B, Table B.16). Performance on this measure improved from DY1 to DY2 for all states. Among states with Medicaid Core Set benchmarks for DY2, CCBHC performance was higher than the benchmark in New Jersey and Oklahoma (however, it is unclear why the Medicaid Core Set performance in Oklahoma is much lower than other states), comparable to the benchmark in Oregon and lower than the benchmark in New York and Pennsylvania.
- Across states, 76 percent of CCBHC clients with schizophrenia or bipolar disorder who received antipsychotic medications had a claim or encounter that indicated the receipt of diabetes screening during DY1; which remained stable (78 percent) in DY2 (see Appendix B, Table B.17). Performance on this measure was stable from DY1 to DY2 for all states except for New Jersey, where performance improved by 18 percentage points. Among states with Medicaid Core Set benchmarks for DY2, performance was comparable to the benchmark in New York but lower than the benchmark in Missouri and Pennsylvania.

In summary, performance on these measures improved or remained stable from DY1 to DY2 (Figure IV.11).

Figure IV.11. Change in Measure Performance from DY1 to DY2 for PH Care Measures							
Measure	MN	MO	NJ	NY	OK	OR	PA
Adult BMI Screening and Follow-up Plan (BMI-SF)							
Weight Assessment for Nutrition and Physical Activity for Children/Adolescents (WCC-BH)							
Diabetes Screening and People with Schizophrenia or Bipolar Disorder who are Using Antipsychotic Medications (SSD)							
Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 CCBHC Quality Measure Reports. Notes: Improved or declined was defined as greater or equal to 5% increase or decrease, respectively, in aggregate performance across all CCBHCs in the state from DY1 to DY2. Stable was defined as less than a 5% change in aggregate performance from DY1 to DY2. Improved. Declined. Stable.							

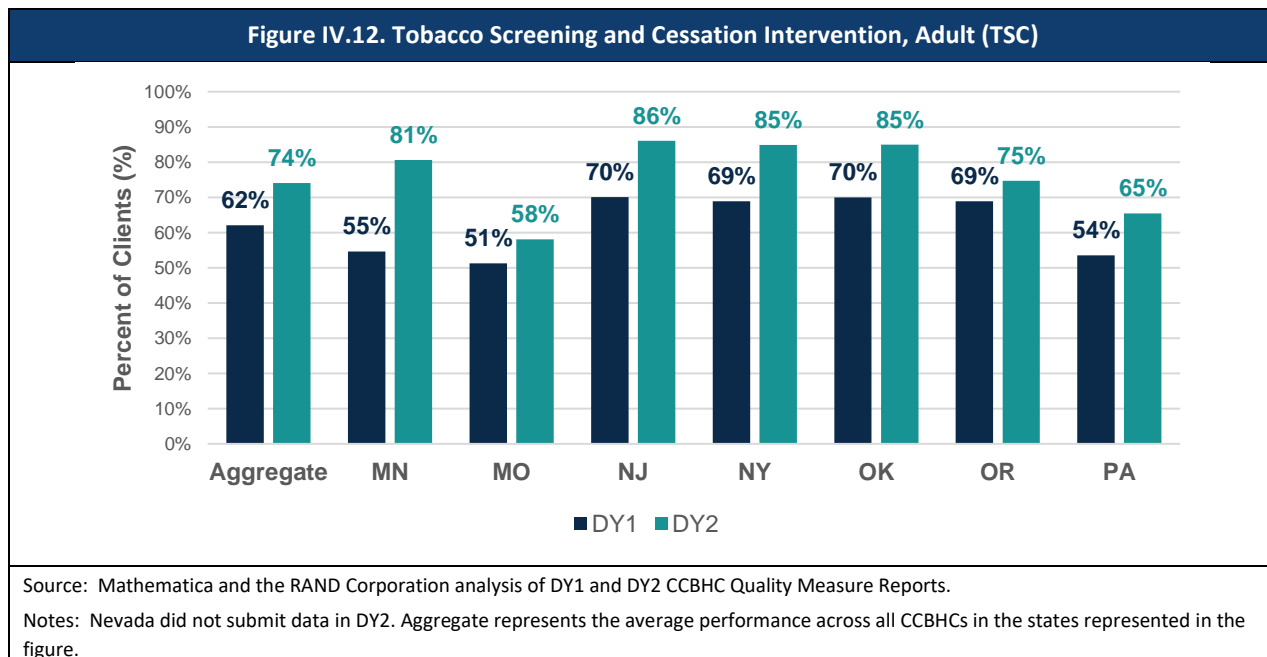
6. Quality Domain 6: Substance use screening and treatment

Evidence-based treatments for SUDs are effective, but rates of initiation and engagement in substance use treatment are low (Ali et al. 2015). Increased screening for substance use is important for identifying individuals who may benefit from intervention, but screening and follow-up rates for substance use are similarly low (NCQA 2021d).

CCBHCs reported the proportion of adult clients who were screened and received intervention for tobacco use among adults and unhealthy alcohol use screening and brief counseling (Tobacco Screening

and Cessation Intervention measure, or TSC). States reported the proportion of CCBHC clients who received initial and subsequent treatment for AOD dependence treatment.

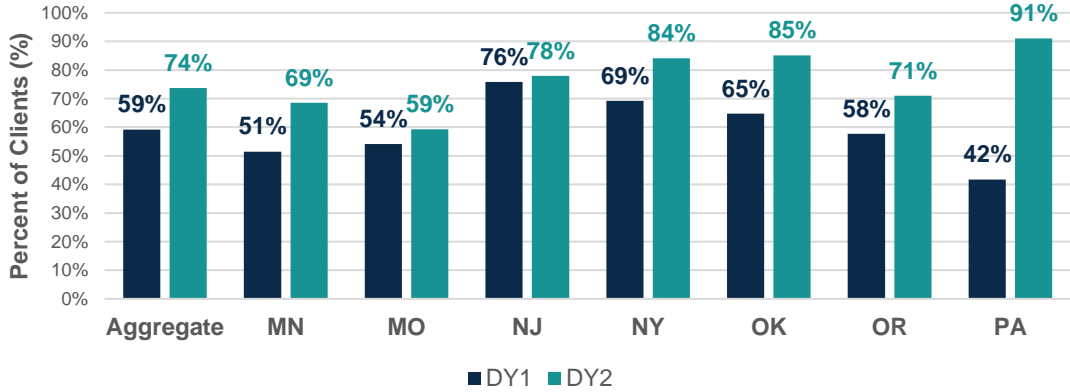
Across states, in the first demonstration year, 62 percent of adult CCBHC clients were screened for tobacco use and received a tobacco cessation intervention (when tobacco use was present) during the past 24 months (Figure IV.12); this improved to 74 percent in DY2. All states improved on this measure. DY2 performance was comparable to the 2018 MIPS benchmark of 89 percent for CCBHCs in Minnesota, New Jersey, New York, and Oklahoma, but CCBHCs in Missouri, Oregon, and Pennsylvania performed below the benchmark.



Across states, in the first demonstration year, 59 percent of adult CCBHC clients were screened for unhealthy alcohol use and received brief counseling (Unhealthy Alcohol Use - Screening and Brief Counseling measure, or ASC)--when screen was positive--in the past 24 months; performance improved to 74 percent in DY2 (Figure IV.13). All states improved on this measure. Performance on this measure in DY2 was better than the MIPS average of 64 percent for CCBHCs in all states except Missouri.

For the Initiation and Engagement of Alcohol and Other Drug Dependence Treatment (IET-BH) measure, we found that, across states, 48 percent of CCBHC clients age 18 or older received treatment for AOD dependence within 14 days of the initial diagnosis (initiation, Figure IV.14) in DY1, which ranged from 16 percent to 54 percent across states. Twenty-eight percent met criteria for initiation and received at least two other AOD services within 30 days of the initiation visit (engagement, Figure IV.15), which ranged from 4 percent to 51 percent across states. Except for Pennsylvania, performance on the initiation and engagement components of this measure met or exceeded Medicaid Core Set measure performance. Performance on this measure was stable from DY1 to DY2 except for New Jersey, which improved on both the initiation and engagement components of the measure. However, New Jersey had a much smaller denominator for this measure relative to other states.

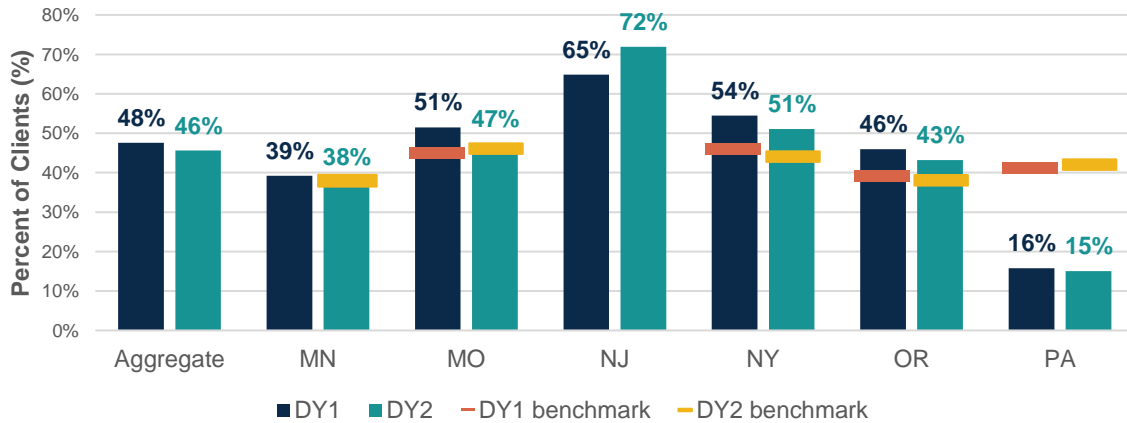
Figure IV.13. Unhealthy Alcohol Use - Screening and Brief Counseling, Adult (ASC)



Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Nevada did not submit data in DY2. Aggregate represents the average performance across all CCBHCs in the states represented in the figure.

Figure IV.14. Initiation of AOD Dependence Treatment, Adult (IET-BH)

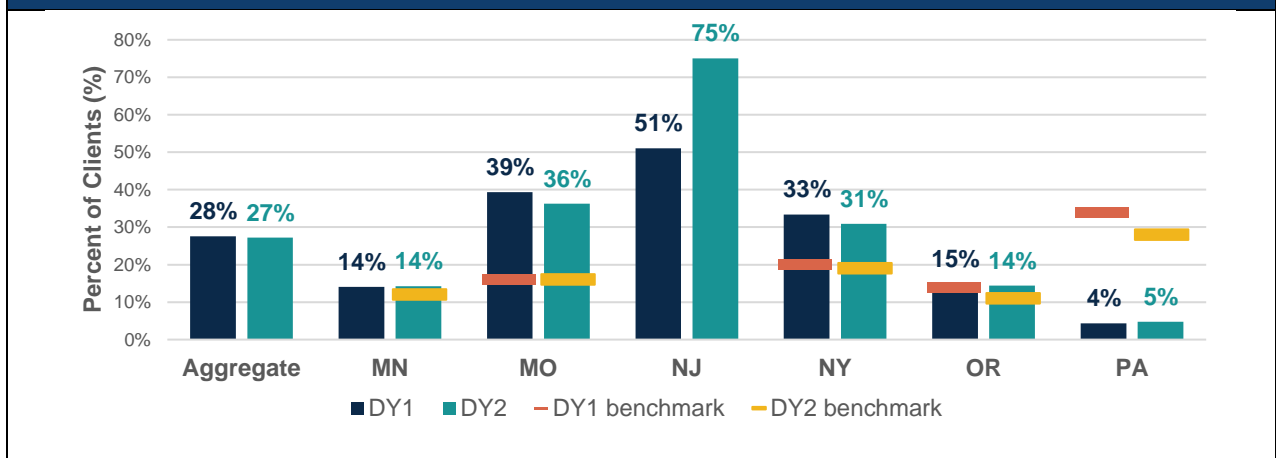


Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Table summarizes performance for adults age 18 and older. Nevada did not submit data in DY2. One New Jersey clinic excluded due to deviation in denominator calculation in DY2 different from DY1. All three Oklahoma clinics excluded due to combined state denominator <30. Benchmark "Total AOD Abuse or Dependence" from the Annual Reporting on the Quality of Care for Adults in Medicaid (FFY 2018 and FFY 2019), available at <https://www.medicaid.gov/medicaid/quality-of-care/performance-measurement/adult-and-child-health-care-quality-measures/adult-core-set/index.html>. Benchmark Ages 18-64.

Aggregate represents the average performance across all CCBHC clients in the states represented in the figure.

Figure IV.15. Engagement of AOD Dependence Treatment, Adult (IET-BH)



Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Table summarizes performance for adults age 18 and older. Nevada did not submit data in DY2. One New Jersey clinic excluded due to deviation in denominator calculation in DY2 different from DY1. All three Oklahoma clinics excluded due to combined state denominator <30. Benchmark "Total AOD Abuse or Dependence" from the Annual Reporting on the Quality of Care for Adults in Medicaid (FFY 2018 for DY1 and FFY 2019 for DY2), available at <https://www.medicaid.gov/medicaid/quality-of-care/performance-measurement/adult-and-child-health-care-quality-measures/adult-core-set/index.html>. Benchmark Ages 18-64.

Aggregate represents the average performance across all CCBHC clients in the states represented in the figure. In summary, performance on these measures improved or remained stable from DY1 to DY2 (Figure IV.16).

Figure IV.16. Change in Measure Performance from DY1 to DY2 for Substance Use Screening and Treatment Measures

Measure	MN	MO	NJ	NY	OK	OR	PA
Tobacco use - Screening and Cessation Intervention (TSC)	▲	▲	▲	▲	▲	▲	▲
Unhealthy Alcohol Use - Screening and Brief Counseling (ASC)	▲	▲	◻	▲	▲	▲	▲
Initiation and Engagement of AOD Dependence Treatment (IET-BH)	◻	◻	▲	◻	n/a	◻	◻

Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Improved or declined was defined as greater or equal to 5% increase or decrease, respectively, in aggregate performance across all CCBHCs in the state from DY1 to DY2. Stable was defined as less than a 5% change in aggregate performance from DY1 to DY2.

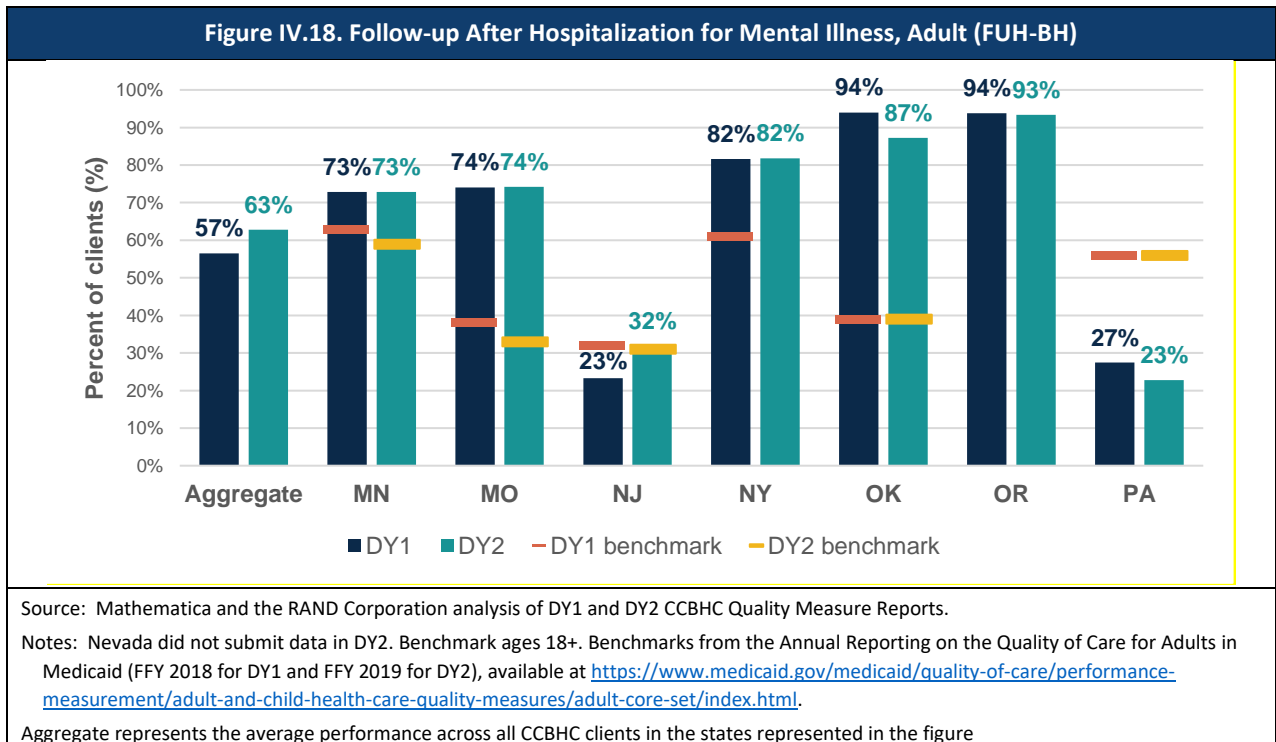
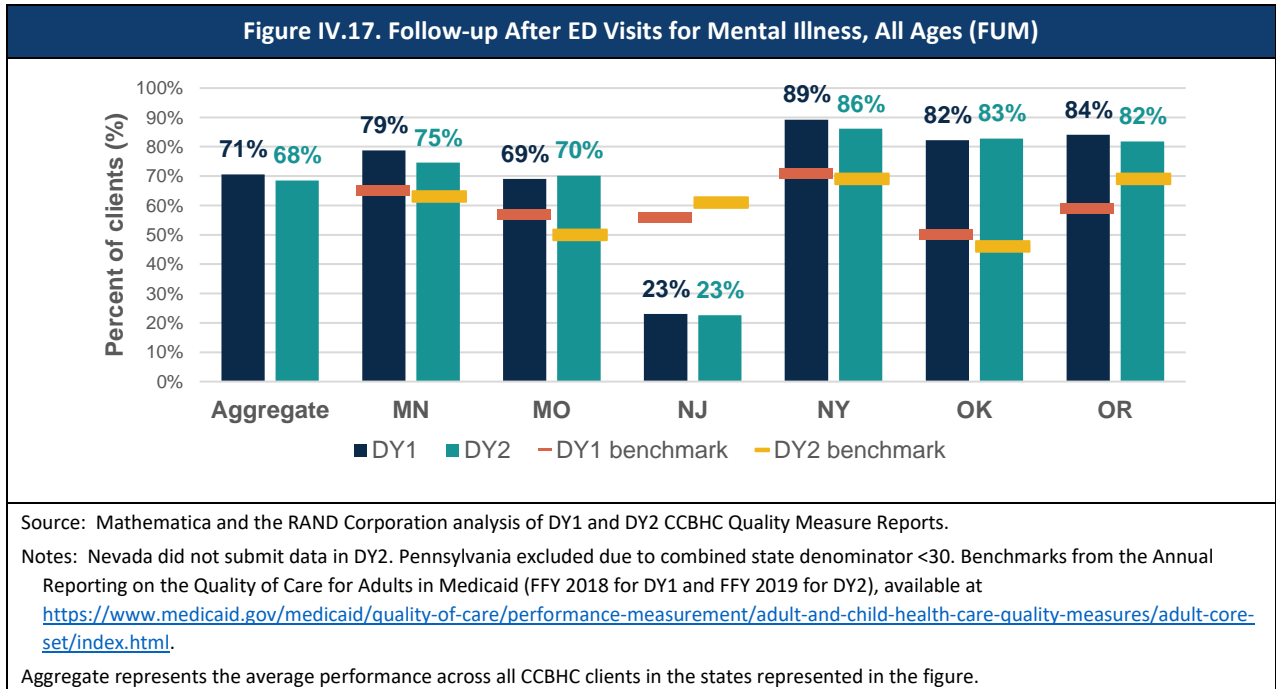
▲ Improved. ▼ Declined. ◻ Stable.

7. Quality Domain 7: Emergency department and hospital transitions

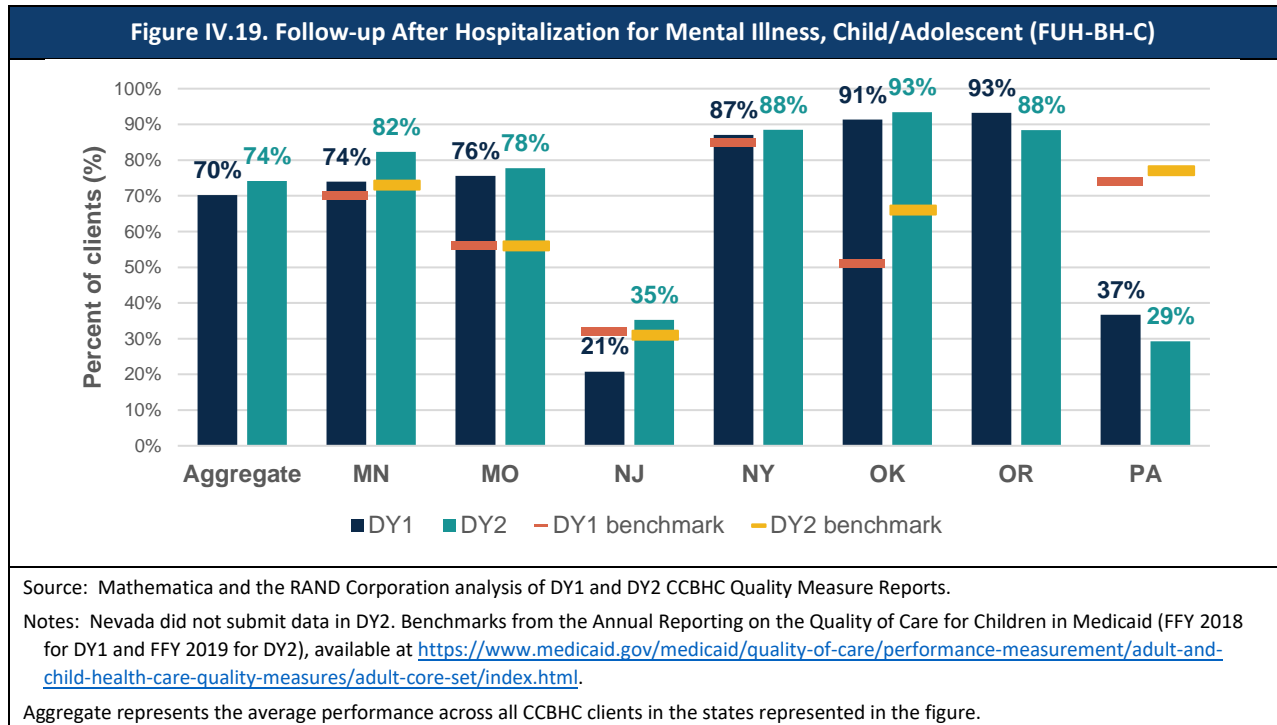
Timely follow-up with individuals who visit an ED for a mental health condition or SUD may reduce subsequent use of the ED and improve functioning and treatment outcomes (NCQA 2021e, 2021f). Likewise, timely follow-up care for individuals recently discharged from a hospital is critical to keep them engaged in treatment (NCQA 2021g) and may reduce the likelihood of subsequent hospitalizations (Morris et al. 2018; Nelson et al. 2000). States reported three measures to assess the delivery of timely follow-up care after ED visits and hospitalizations.

Across states, 71 percent of CCBHC clients received follow-up care within 30 days after an ED visit for a mental health condition (Follow-up After ED Visit for Mental Illness measure, or FUM; see Figure

IV.17) and 39 percent received follow-up care within 30 days of ED visits for AOD dependence (see Appendix B, Table B.22). Most states exceeded available benchmarks (except for New Jersey for the mental health follow-up measure and Oklahoma for the follow-up after AOD measure in DY1) (see Appendix B, Table B.22). Performance on this measure was stable from DY1 to DY2 except for Oklahoma, which improved 9 percentage points on follow-up within 30 days for AOD.

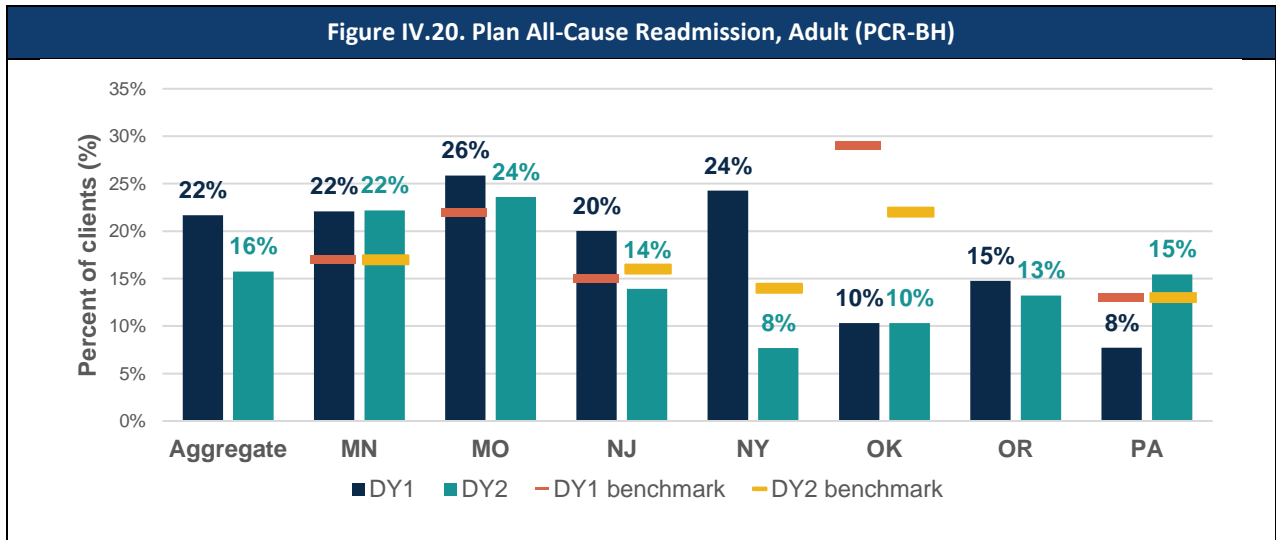


For the Follow-up After Hospitalization for Mental Illness (FUH-BH) treatment measures, we found that rates across states were 57 percent for adults (Figure IV.18) and 70 percent for children/adolescents in DY1; they met or exceeded benchmarks for all states except Pennsylvania (Figure IV.19; no benchmark was available for Oregon). Performance on these measures was generally stable from DY1 to DY2.



The overall rate of all-cause readmission (that is, the proportion of individuals hospitalized who had a subsequent readmission to hospital within 30 days, or Plan All-Cause Readmissions Rate measure [PCR-BH]) was 22 percent in DY1 (Figure IV.20), slightly higher than the Medicaid Core Set benchmark for this quality measure (17 percent).¹⁹ Performance on these measures was generally stable from DY1 to DY2; New York demonstrated substantial improvement and only one state, Pennsylvania, reported poorer performance in DY2 than in DY1.

¹⁹ CCBHC measure specifications did not require risk adjustment of the PCR-BH measure. The Medicaid Core Set benchmarks for this measure were also not risk adjusted in FFY 2018.



Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: A lower performance (i.e., rate of readmission) is better for PCR-BH measure; negative change in performance is improvement. Nevada did not submit data in DY2. Benchmark Ages 18-64. Benchmark "Observed Readmission Rate" from Annual Reporting on the Quality of Care for Adults in Medicaid (FFY 2018 for DY1 and FFY 2019 for DY2), available at <https://www.medicaid.gov/medicaid/quality-of-care/performance-measurement/adult-and-child-health-care-quality-measures/adult-core-set/index.html>.

Aggregate represents the average performance across all CCBHC clients in the states represented in the figure.

In summary, with a few exceptions, performance on these measures remained stable from DY1 to DY2 (Figure IV.21).

Figure IV.21. Change in Measure Performance from DY1 to DY2 for ED and Hospital Transition Measures

Measure	MN	MO	NJ	NY	OK	OR	PA
Follow-up After ED Visit for Mental Illness (FUM)	○	○	○	○	○	○	n/a
Follow-up After ED Visit for AOD Dependence (FUA)	○	○	○	○	▲	○	○
Follow-up After Hospitalization for Mental Illness, Adult (FUH-BH-A)	○	○	▲	○	▼	○	▼
Follow-up After Hospitalization for Mental Illness, Child/Adolescent (FUH-BH-C)	▲	○	▲	○	○	▼	▼
Plan All-Cause Readmission Rate, Adult (PCR-BH)	○	○	▼	▼	○	○	▲

Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Improved or declined was defined as greater or equal to 5% increase or decrease, respectively, in aggregate performance across all CCBHCs in the state from DY1 to DY2. Stable was defined as less than a 5% change in aggregate performance from DY1 to DY2.

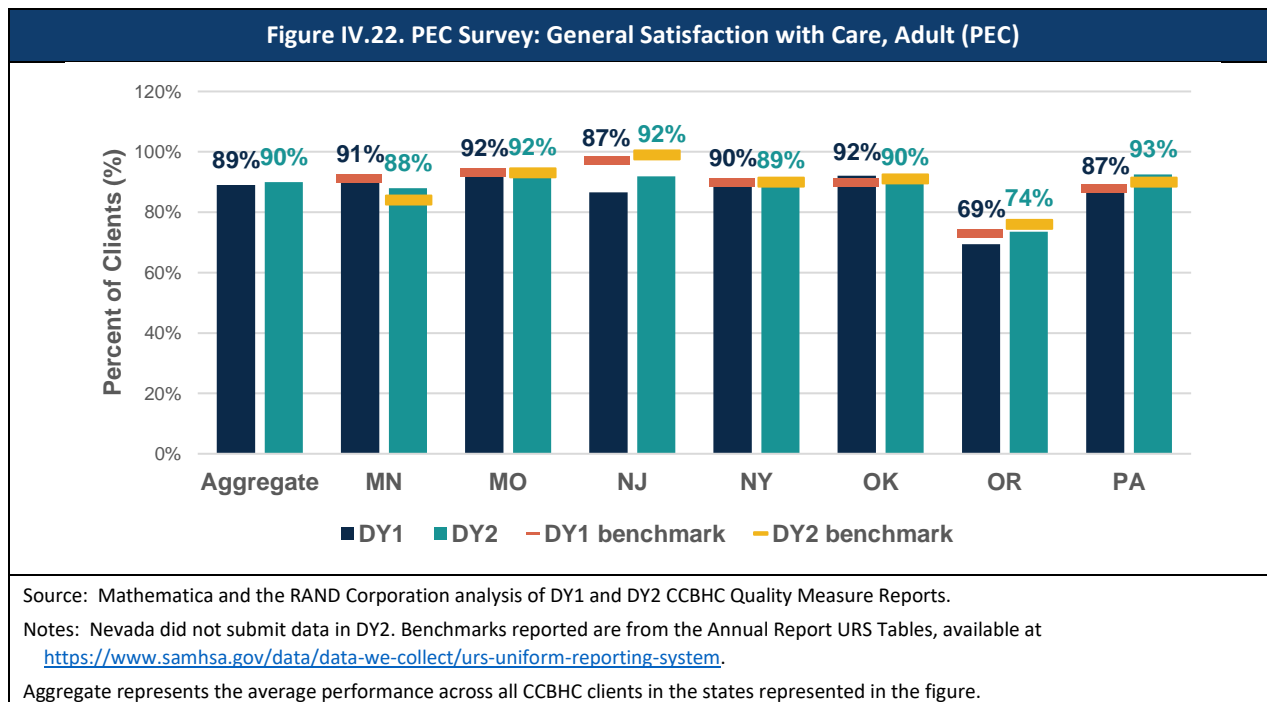
▲ Improved. ▼ Declined. ○ Stable.

8. Quality Domain 8: Consumer and family experiences with CCBHCs

A client-centered approach to care is a cornerstone of the CCBHC model (SAMHSA 2020d) and measuring client and family-reported experiences with care provides critical information about the functioning of the health care system (Agency for Healthcare Research and Quality 2021). States surveyed adult CCBHC clients and the family members/caregivers of children/adolescents served in CCBHCs to assess their experiences with care. States typically surveyed a random sample of CCBHC clients and family members. The sampling methods and response rates varied across CCBHCs and states.

Adults reported their perceptions of access to care, quality and appropriateness of care, outcomes of care, participation in treatment planning, and general satisfaction with CCBHC services. Family members reported access to care, cultural sensitivity of CCBHC staff, outcomes of care, family participation in treatment planning, and general satisfaction with CCBHC services. State-specific benchmarks are taken from the URS for SAMHSA Community Mental Health Services Block Grants, which includes annual data reported by state mental health authorities on client characteristics and receipt of services, including client and family assessments of care (SAMHSA 2019). The URS data represents a broader population of clients than those served in CCBHCs, but it is the best available comparison. As noted below, differences in state-specific rates and benchmarks may be attributable to several factors, including differences in clinic and state methodologies for collecting and reporting experience of care data.

Adult clients’ perceptions of care. Across states, adult clients had generally positive perceptions of the care provided by CCBHCs (Patient Experience of Care measure, or PEC) in both DY1 and DY2, and there was little change over time (Figure IV.22). In Appendix B, Tables B.26-B.30, we include the full findings for each experience of care measure. There was some state variation in both changes over time and performance relative to benchmarks, depending on the measure. For example, Oregon tended to have systematically lower CCBHC performance; it also has lower state-level benchmarks for most measures compared to other states. Seventy-three percent of adult clients in Oregon had positive perceptions of the quality and appropriateness of CCBHC services they received in DY2, which was 5 percentage points higher than DY1, but it fell about six percentage points below the state benchmark of 79 percent for this measure. Pennsylvania tended to have higher CCBHC performance and higher state-level benchmarks. For example, 94 percent of adult clients had positive perceptions of quality and appropriateness of CCBHCs services in DY2, which was a 4-percentage point increase from DY1, yet it still fell four points below that state benchmark of 98 percent on this measure. Thus, both states showed improvements compared to DY1 but fell slightly short of state-specified benchmarks. In Appendix B, Tables B.26-B.30, we include the full findings for each experience of care measure.



Family member perceptions of care for children/adolescents. Consistent with the findings for adults, across states family members had generally positive perceptions of CCBHC services for children/adolescents (Youth/Family Experience of Care measure, or Y/FEC; Figure IV.23). In Appendix B, Tables B.31-B.35, we include the full findings for each experience of care measure. Depending on the state there were substantial improvements in these measures across demonstration years. For example, 93 percent of family members in Missouri had positive perceptions of CCBCH outcomes in DY2 (a 27-point increase over DY1 performance), which likely accounted for the substantial increase in DY2 aggregate performance across states. Missouri had a 14-point improvement in the proportion of family members with positive perceptions of access to care (97 percent in DY2, ten points above the state benchmark). Pennsylvania, which tended to have average-to-high benchmarks relative to other states, showed stability or improvements on three measures, and a substantial decline for family members reporting positively on CCBHC outcomes (72 percent in DY2; a 12-point decrease from DY1 and six points below the state benchmark for this measure). Other states showed both slight increases and decreases across family experience measures from DY1 to DY2.

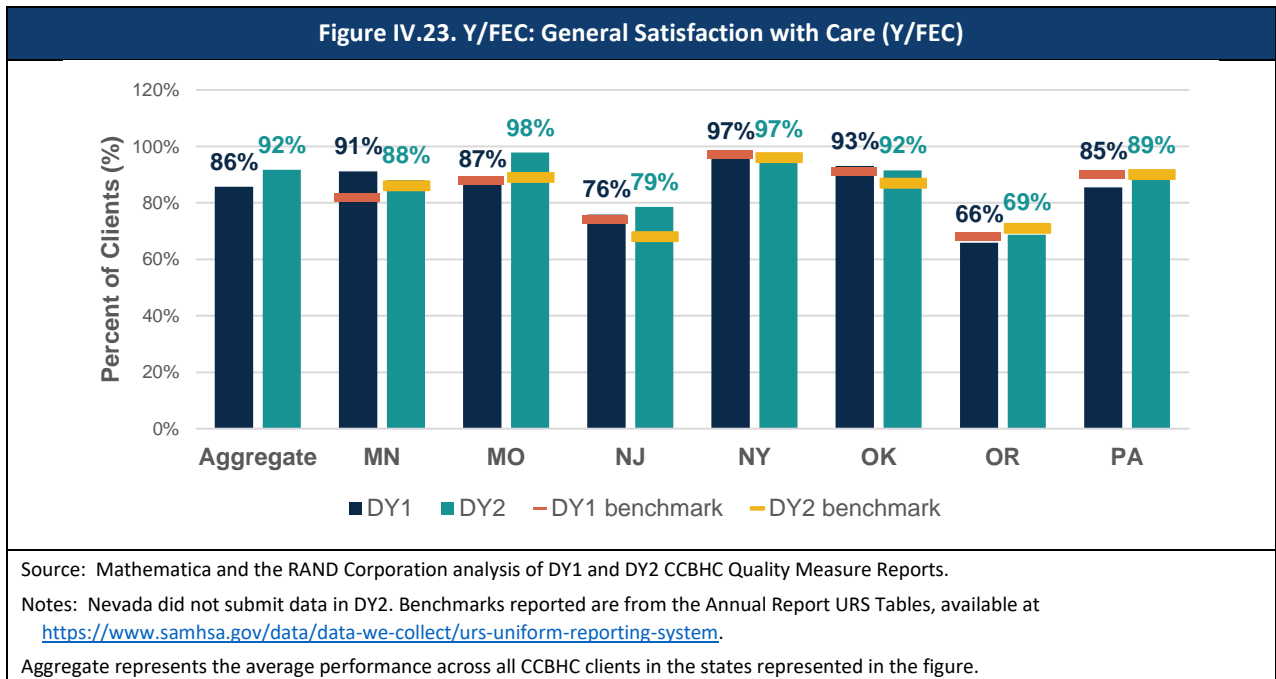


Figure IV.24. Change in Measure Performance from DY1 to DY2 for General Satisfaction for Adult Clients and Family Members of Child/Adolescent Clients

Measure	MN	MO	NJ	NY	OK	OR	PA
Patient Experience of Care Survey, Adult (PEC)	○	○	▲	○	○	○	▲
Youth/Family Experience of Care Survey (Y/FEC)	○	▲	○	○	○	○	○

Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 CCBHC Quality Measure Reports.
 Notes: Improved or declined was defined as greater or equal to 5% increase or decrease, respectively, in aggregate performance across all CCBHCs in the state from DY1 to DY2. Stable was defined as less than a 5% change in aggregate performance from DY1 to DY2.
 ▲ Improved. ▼ Declined. ○ Stable.

In summary, with a few exceptions, measure performance generally remained stable from DY1 to DY2 across the domain (Figure IV.24).

Overall, aggregate performance on the quality measures was stable or improved across demonstration years (see Appendix B, Table B.36). In general, there were more substantial improvements in the CCBHC-reported measures than state-reported measures, including improvements in timely access to care, screening/assessment for specific conditions, and follow-up after hospitalizations and ED visits. These improvements may reflect changes in clinical practices and enhancements to data collection procedures and reporting systems. Among the CCBHC-reported measures, few states demonstrated improvement from DY1 to DY2 in depression remission. This finding is probably affected by challenges in administering the PHQ-9 at multiple time-points and extracting the necessary data from EHRs, but it could also reflect challenges keeping clients engaged in care and following up with them to assess improvements. Some state-reported measures, such as those focused on ADHD, also improved. For several of the state-reported measures that demonstrated stable performance across years, performance approached or exceeded available benchmarks. The relative stability in state-led measures may reflect states' prior experience with and existing capacity to report quality measures that rely on claims data.

C. Awarding of Quality Bonus Payments

The payment model for the demonstration allowed states to award QBPs to CCBHCs based on their performance on quality measures to incentivize high-quality care and guard against gaming the payment system. A potential advantage of the PPS is that it affords CCBHCs considerable flexibility to provide individualized care, without worrying about how the delivery of specific billable services impacts the revenue of the clinic. However, the model could also incentivize withholding care, since the CCBHC receives payment for the day (for PPS-1 states) or month (for PPS-2 states) in which the client has an encounter with the CCBHC regardless of the specific services provided. The QBP is designed to counter this incentive by financially rewarding performance on quality measures. States that select the PPS-2 model are required to implement a QBP system, reflecting the greater amount of flexibility with a monthly as opposed to a daily payment. QBPs are optional for states that select the PPS-1 model. All but one of the original PPS-1 states elected to implement QBP systems (Table IV.1).

CMS required states with QBP systems to use six measures to award QBPs. However, states set the measure performance thresholds and some states required CCBHCs to meet performance on additional measures (see Appendix B, Table B.36 for the measures and performance thresholds used in each state). States also set the amount of the QBPs and had the option to modify the parameters of the QBPs from DY1 to DY2. For example, some states increased the performance thresholds for DY2 above the DY1 levels (see Appendix B, Table B.36). All seven states with QBPs budgeted general revenue funds to cover bonus payments to CCBHCs. Some states set aside fixed total amounts for these payments, while others linked the bonuses to a percentage of the total anticipated CCBHC payments. Across states, 54 CCBHCs were eligible for QBPs in DY1:

- Thirty-three CCBHCs received QBPs in DY1, and 27 received these payments in DY2. Some states (Missouri, New Jersey, and Pennsylvania) awarded bonus payments to all or nearly all CCBHCs, whereas other states (New York and Oklahoma) did not award any bonus payments in either year. Minnesota awarded payments to two of the six CCBHCs in the state in DY1 but none of the CCBHCs in DY2.
- Some states did not award bonus payments because CCBHCs did not meet the quality measure performance thresholds. At the time of writing this report, New York had not awarded bonus

payments to CCBHCs because funding was not available, but it was unclear if the CCBHCs would meet the performance thresholds to receive the payments.

- In some states, the amount of QBPs distributed deviated from the amount the state planned to award at the outset of the demonstration. For example, Missouri anticipated awarding approximately \$4.2 million per demonstration year in bonus payments but reported awarding over \$17 million in DY1 and \$19 million in DY2. In contrast, New Jersey awarded substantially less than anticipated.
- The average hypothetical bonus payment per CCBHC varied widely by state. For example, if QBPs payments in Pennsylvania were equally distributed across the six clinics, each clinic would have received approximately \$95,000 in DY1. (We do not know how much each CCBHC received or if the funding was distributed evenly across those clinics.) In contrast, New Jersey distributed \$27,000 across six clinics, or approximately \$4,500 per clinic. CCBHCs in Missouri would have received over \$1 million per year in bonus payments if the payments were evenly distributed across clinics. However, we should note that the number of clients served by CCBHCs varied substantially across states (see Table III.3 in Chapter III), and CCBHCs in Missouri served the largest number of clients and had higher caseloads than other states.

Across the seven states with QBPs, performance improved or was stable on at least four of the six measures that CMS required states use to award QBPs (Table IV.1). This could suggest that the QBPs incentivized continued or improving quality of care in the areas assessed by the required measures, but it is also possible that performance on these measures would have changed in the same way over the same period of time without the offer of QBPs.

Table IV.1. Planned and Awarded QBPs						
State (number of CCBHCs in DY1)	Amount State Initially Estimated for QBPs per DY	Number of CCBHCs that Received Payments and Total Aggregate Payments to CCBHCs in DY1	Number of CCBHCs that Received Payments and Total Aggregate Payments to CCBHCs in DY2	State Aggregate Performance on the 6 QBP Required Measures Change from DY1 to DY2		
				Improved	Declined	Stable
MN (6)	5% of total payments, or approximately \$2.5 million	Awarded: 2 of 6 Total payments: \$740,049	Awarded: none; thresholds not met	3	1	2
MO (15)	1% of total payments, or approximately \$4.2 million	Awarded: 15 of 15 Total payments: \$17,210,855	Awarded: 15 of 15 Total payments: \$19,138,499	2	0	4
NV (3)	10% of DY1 payments and 15% of DY2 payments, or approximately \$1.5 million	Awarded: 3 of 3 Total payments: 10% of DY1 payments ^a	No data reported	n/a	n/a	n/a
NJ (7)	Approximately \$350,000	Awarded: 6 of 7 Total payments: \$27,000	Awarded: 6 of 7 Total payments: \$27,000	2	2	2
NY (13)	Approximately \$2 million	Awarded: none; thresholds not met	Awarded: none; state reported that funding was not available for payments	1	0	5
OK (3)	1% of total payments, or approximately \$1 million	Awarded: none; thresholds not met	Awarded: None; thresholds not met	2	1	3
PA (7)	3% of total payments, or approximately \$2.1 million	Awarded: 6 of 7 Total payments: \$568,000	Awarded: 6 of 7 Total payments: \$1,124,500	3	2	1

Source: State CCBHC Demonstration Applications, Part 3, and Mathematica and RAND interviews with state Medicaid and behavioral health officials.

Note: Oklahoma and New Jersey were required to offer QBPs because they selected the PPS-2 payment model, whereas PPS-1 states had the option to offer QBPs. Missouri did not report why the bonus payment amount increased from 1% to 5% of total payments but confirmed the amount distributed in DY1 and DY2. Improved or declined was defined as greater or equal to 5% increase or decrease, respectively, in aggregate performance across all CCBHCs in the state from DY1 to DY2. Stable was defined as less than a 5% change in aggregate performance from DY1 to DY2.

a. Nevada reported that bonus payments were distributed in DY1 but did not confirm the final amount of the bonus payments.

V. CERTIFIED COMMUNITY BEHAVIORAL HEALTH CLINIC PAYMENT RATES AND COSTS

Community behavioral health clinics have not historically been reimbursed through daily or monthly prospective payment mechanisms. Both PPS-1 and PPS-2 are developed by analyzing actual and projected costs of providing services to develop rates that are intended to cover the expected costs of providing the full scope of services required in the CCBHC certification criteria. These payment models enable CCBHCs to exercise considerable flexibility in tailoring services to the needs of consumers without being concerned about the financial impact of each service decision or procedure. Ideally, in contrast with FFS systems, where each additional service brings an additional payment, the prospective payment mechanisms should not incentivize providing high volumes of care. Rather, the amount that clinics are paid is determined by the average cost of care, regardless of the quantity of services provided on a given day or month. While there is an incentive for clinics to see consumers more frequently, particularly under PPS-1, this incentive only operates over the short term because states have the option to adjust the rates based on the cost data from the previous year (a process known as re-basing). If a clinic has many visit-days or visit-months in one year, it will collect more reimbursement during that year, but the state can adjust the rates for the next year to bring them in alignment with actual costs.

This chapter describes the processes that states used to set CCBHC rates, the rates and costs in each demonstration year, and total Medicaid/CHIP expenditures for CCBHC services in the first demonstration year (the latest year of data available at the time of this report). Given the novelty of the rate-setting process for CMHCs, the details of this process could be useful for other states considering implementing the CCBHC model or similar payment models. The design of the PPS for the demonstration was informed by other PPS models, including the payment system for Federally Qualified Health Centers (FQHCs), but PPS models have not been widely applied or tested for CMHCs. Examining payment rates relative to CCBHCs' costs provides information about whether the PPS model was able to sufficiently support the delivery of the required CCBHC services and provide CCBHCs with stable funding. Medicaid expenditure data, which reflects total state and federal expenditures on CCBHCs, can inform future cost projections for expanding the CCBHC model.

A. Process for Establishing Payment Rates

States set the PPS rates for each CCBHC by dividing projected total allowable costs by the projected number of visit-days (for PPS-1) or visit-months (for PPS-2). In the case of PPS-2, states used the same formula to set rates for each of the special populations defined by the state's rate schedule. Although the formula for calculating the rates is simple, the rate calculation requires accurate data for calculating the allowable costs and number of visit-days or visit-months. According to state officials, collecting this data prior to the beginning of the demonstration was a challenge for states and the clinics that were to become CCBHCs.

To set the rates, states collected data on clinics' historical operating costs using an Office of Management and Budget approved cost report template provided by CMS. The cost reports collected data on labor costs by provider type, other direct costs, such as medical supplies and insurance, and indirect costs, such as building costs and administrative costs. In New York, the clinics that became CCBHCs had experience submitting detailed, audited cost reports to the state prior to the demonstration and were able to use the information from their own cost reports to complete the cost-reporting template provided by CMS. However, clinics in the seven other states participating in the demonstration did not have experience

completing these types of cost-reporting forms or reporting their operating costs. In these states, state officials reported that collecting this information was a major challenge for clinics. Several states provided technical support to the clinics, such as funding for accounting consultations, to improve their cost-reporting capabilities. States conducted desk reviews of the cost reports submitted by clinics to ensure accuracy.

The rate-setting process also required clinics to forecast anticipated changes in costs as a result of implementing the CCBHC certification criteria. Since the clinics would be broadening their scope of services to meet the criteria, they would generally be increasing their total operating costs. However, because there was a lack of historical data on the actual costs of providing the enhanced scope of services, clinics had to estimate these future costs, which included staffing, spending on training or infrastructure, and other anticipated costs approved by the states.

Clinics were also required to estimate the number of visit-days or visit-months they would have over the course of DY1. While the clinics had historical information on patterns of service use, they did not typically collect information on visit-days or visit-months prior to the demonstration. As CCBHCs, they planned to expand services to new populations and make changes to their organizational structure and staffing. They anticipated that the number of visit-days or visit-months would be quite different during the demonstration than they had been historically, but it was challenging to estimate precisely how many visit-days or visit-months they would have in a year.

Because states set PPS rates by dividing the projected total allowable costs by the projected number of visit-days or visit-months, there are two ways the rates could diverge from the actual visit-day or visit-month costs incurred. First, the projected total costs of operating the CCBHC could be different from the actual total costs. This could happen, for example, if the CCBHC hired higher or lower salaried staff than anticipated or incorporated services that were more expensive to provide than anticipated. Second, the PPS rates could be different than the actual costs if the actual number of visit-days or visit-months was higher or lower than anticipated. For example, if the clinic increased the number of visit-days or visit-months beyond the expected number, while their total costs remain constant, their actual cost per visit-day or visit-month would be lower than anticipated.

States had the option to re-base DY2 rates for all or some CCBHCs based on the DY1 cost reports. Re-basing could increase or decrease the rates to bring them in closer alignment with costs. Minnesota, New Jersey, New York, Nevada, Oklahoma, and Pennsylvania re-based DY2 rates. Oregon and Missouri did not re-base DY2 rates because they wanted to allow more time for data on service use and costs to accumulate to inform their decisions. All states (even those that re-based) adjusted DY2 rates for inflation using the MEI, a measure of inflation in the health care sector, as required by the demonstration.

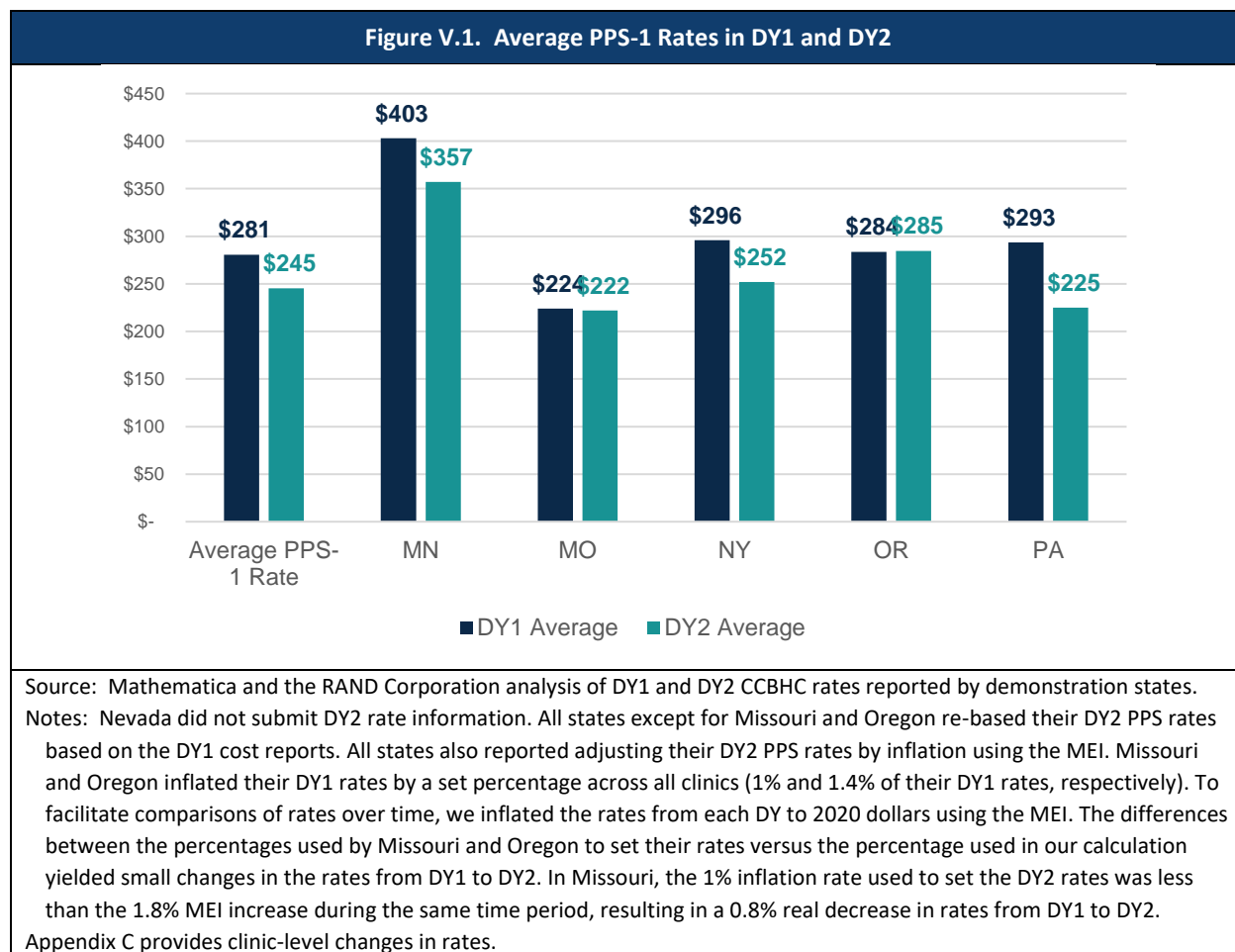
B. Certified Community Behavioral Health Clinic Payment Rates

CCBHC payment rates varied within and across states. The average daily rate across the 56 clinics in PPS-1 states was \$281 in DY1 and \$245 in DY2. In each demonstration year, PPS-1 rates varied across clinics within the same state (see Appendix C for clinic-level rates for each year). For some states, such as Minnesota and Pennsylvania, rates varied widely across CCBHCs, whereas in other states, such as

Missouri and Nevada, the rates varied less across CCBHCs. This within-state variation was driven, in part, by clinic location and differences in staffing and staff salaries.²⁰

Among the PPS-1 states that provided their CCBHC rates for both demonstration years,²¹ the average rate either decreased or stayed about the same from DY1 to DY2 (Figure V.1).

- In the three PPS-1 states that re-based their DY2 rates based on the DY1 cost reports (Minnesota, New York, and Pennsylvania), the rates decreased on average.
- In the two PPS-1 states that did not re-base their DY2 rates based on the DY1 cost reports (Missouri and Oregon), the rates changed by only a few dollars.

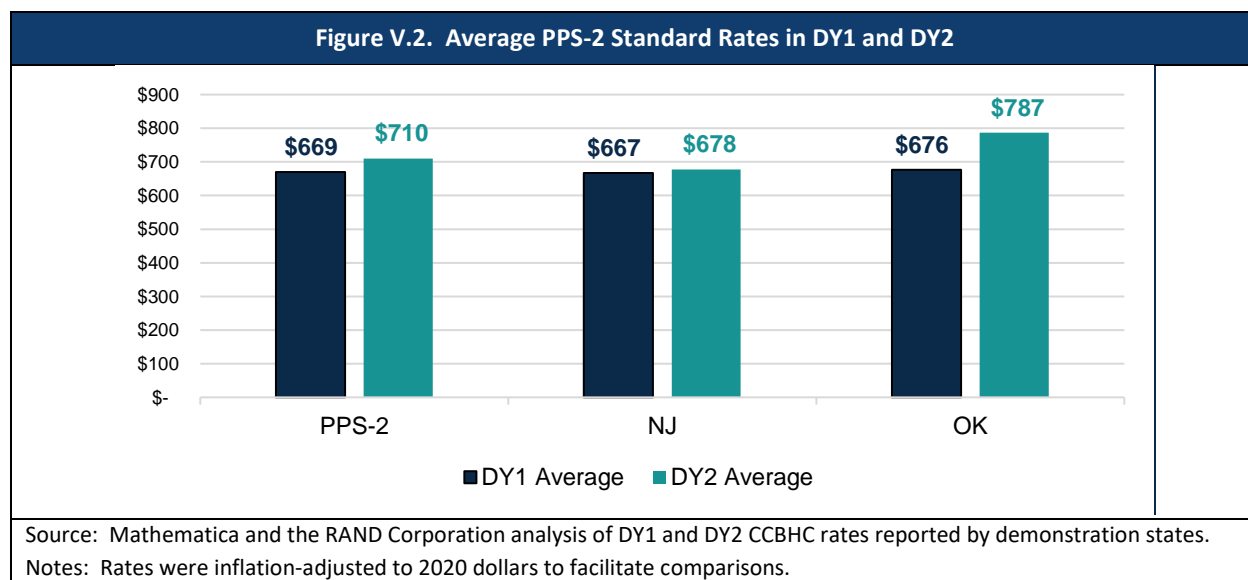


²⁰ PPS-1 rates were, on average, higher in urban CCBHCs versus rural CCBHCs, and in CCBHCs that served a smaller number of consumers versus those that served a higher number of consumers (as measured by total visit-days in DY1). PPS-1 rates were also, on average, higher among CCBHCs in which a larger share of their total full-time equivalent staff was dedicated to medical doctors. See Breslau et al. 2019 for more details.

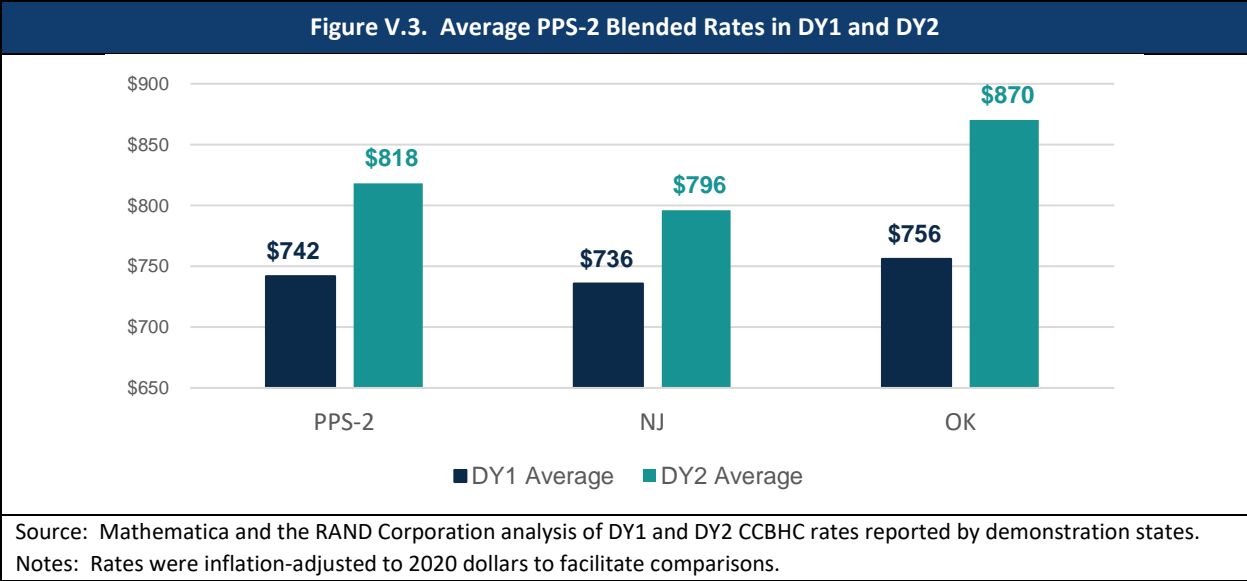
²¹ Nevada did not submit DY2 rate information for the evaluation.

PPS-2 rates are structurally more complicated than PPS-1 rates. The PPS-2 has multiple rate categories, one rate for the standard population and additional rates for special populations (that is, consumers who met criteria for certain conditions expected to have different costs on average).²² The special population rates were higher on average than the standard population rates, although this pattern did not hold for all CCBHCs (see Appendix C for the rates for each clinic). To compare the PPS-2 rates within and across states, we calculated a blended rate for each CCBHC using the standard population rate and each of the special population rates. For each clinic, we weighted each population rate by the number of visit-months in that category in DY1 and DY2 according to the cost reports and then calculated the average for the clinic. We then calculated the average across the clinics to report a state average (see Appendix C for the methodology to calculate the blended rate).

In DY1, the inflation-adjusted average blended rates in New Jersey and Oklahoma were \$736 and \$756, respectively. The range across clinics in the blended rates was wider in New Jersey than in Oklahoma, which is not surprising given the larger number of CCBHCs in that state (see Appendix C for the rates for each CCBHC). The average standard and blended rate increased from DY1 to DY2 for both PPS-2 states (Figures V.2 and V.3). The increase was particularly large in Oklahoma, where there was an increase of 16 percent in the standard rate and an increase of 15 percent in the blended rate from DY1 to DY2 after adjusting for inflation.



²² CMS allowed states to define their special populations and associated rates for the demonstration. The two PPS-2 states categorized individuals receiving CCBHC services into standard and special populations. New Jersey categorized the following special populations each with a unique rate: adults with SMI, adolescents with SED, people with SUD, and people with post-traumatic stress disorder (PTSD). New Jersey categorized the following special populations each with a unique rate: adults with SMI, adolescents with SED, adults with significant SUD, adolescents with significant SUD, and people experiencing chronic homelessness. CMS allowed states to define their special populations and associated rates for the demonstration.



C. Average Daily or Monthly Costs and Per Client Costs

We calculated the average cost per visit-day or visit-month and average cost per client to better understand how these costs changed over time and to inform future cost projections of CCBHC services (Table V.I).

Among PPS-1 states, the average cost per visit-day in DY1 ranged from \$188 in Pennsylvania to \$289 in Oregon. In Minnesota and Oregon, the average per visit-day in DY2 was within a few dollars of the average in DY1, whereas in Missouri, New York, and Pennsylvania the average increased more substantially from DY1 to DY2. Average visits and per consumer costs did not always change in the same direction from DY1 to DY2, depending on the state:

- In Minnesota and Pennsylvania, the cost per consumer decreased from DY1 to DY2. These states had fewer average daily visits per consumer in DY2 than in DY1. As described in Chapter III, the CCBHCs in these states expanded their caseloads from DY1 to DY2.
- In New York, Missouri, and Oregon, the average cost per consumer increased from DY1 to DY2, and there was no substantial change in the average number of daily visits. These findings suggest that these states maintained the same average number of visits with consumers (even as caseloads expanded) but the average costs per consumer increased.
- In Oklahoma, both the average cost per visit-month and the number of visit-months increased from DY1 to DY2, resulting in an increase in average monthly cost per consumer.

Table V.1. Average Cost Per Visit-Day or Visit-Month and Average Cost Per Consumer in Each DY

State	Average Cost Per Visit-Day or Visit Month			Average Cost Per Client			Change in Average Visit-Days or Visit-Months Per Client from DY1 to DY2
	DY1	DY2	Change from DY1 to DY2	DY1	DY2	Change from DY1 to DY2	
MN	\$273.03	\$269.69	-\$3.33	\$3,107.94	\$2,796.99	-\$310.95	-1.0
MO	\$198.21	\$211.53	\$13.33	\$3,316.07	\$3,537.89	\$221.83	0.0
NY	\$197.12	\$220.19	\$23.07	\$2,523.14	\$2,843.52	\$320.38	0.1
OR	\$289.36	\$286.45	-\$2.91	\$3,043.45	\$3,189.42	\$145.97	0.6
PA	\$188.05	\$195.54	\$7.49	\$2,656.26	\$2,359.99	-\$296.27	-2.1
OK	\$739.41	\$754.89	\$15.48	\$4,260.94	\$5,326.56	\$1,065.62	1.3

Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 CCBHC cost reports.

Notes: Oklahoma is the only PPS-2 state in the table. Findings refer to the average cost per visit-month (and change in visit-months) rather than average cost per visit-day in all other PPS-1 states in the table.

Nevada is excluded from this table because the state did not submit cost reports for either DY.

New Jersey is excluded from this table because the cost reports submitted by the state included projected rather than actual costs.

We divided CCBHC costs by the number of visit-days or visit-months to calculate the average cost per visit-day or visit-month. We divided total costs by the CCBHC caseloads from each DY to calculate the average cost per consumer. To compare across years, we adjusted for inflation to 2020 dollars using CMS's MEI. This table presents the average costs for all consumers who received care from CCBHCs (not limited to Medicaid beneficiaries) because the cost reports do not separate Medicaid costs from other costs.

D. Convergence of Rates and Costs Over Time

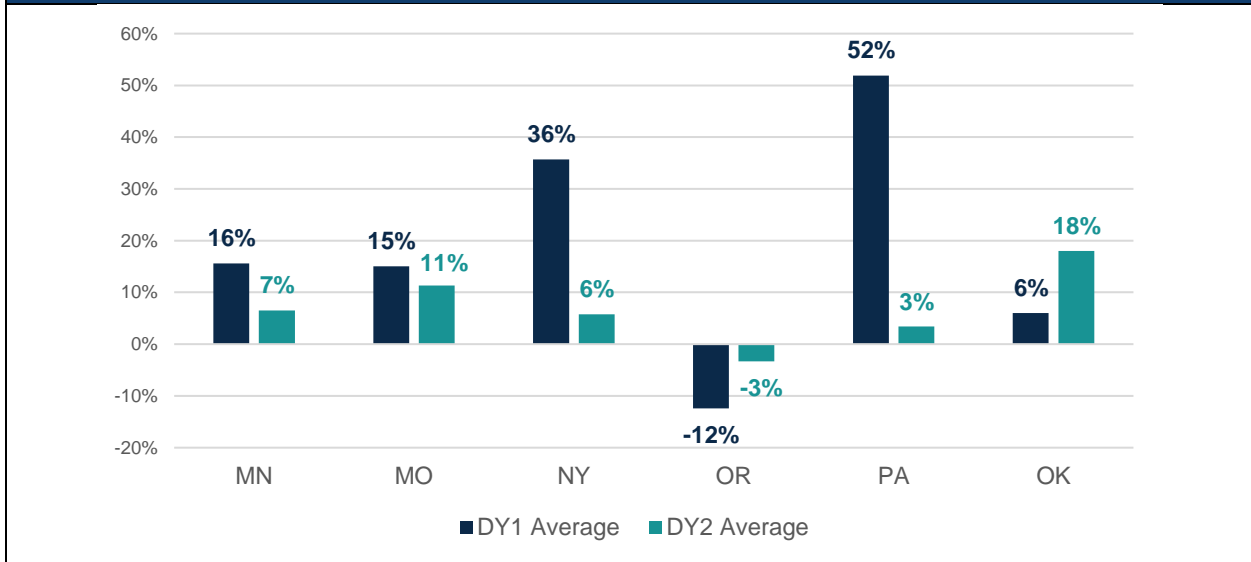
In the first demonstration year, PPS-1 payment rates were, on average, higher than costs for CCBHCs in Minnesota, Missouri, New York, and Pennsylvania (Figure V.4). In contrast, the payment rate for CCBHCs in Oregon was, on average, less than daily costs. The percentage differences between the rates and costs decreased for all states from DY1 to DY2, indicating a move toward convergence of rates and costs over time. For example:

- In Minnesota, the rates were, on average, 16 percent higher than costs in DY1 but only 7 percent higher than costs in DY2. The most dramatic change was in Pennsylvania, where rates exceeded costs by 52 percent in DY1 but only 3 percent in DY2.
- In Oregon, the only PPS-1 state where rates were, on average, lower than costs in DY1, the rates remained, on average, lower than costs in DY2 (resulting in negative percentage differences in both years). However, the difference between rates and costs in DY2 was much smaller in magnitude relative to DY1.
- Missouri and Oregon experienced closer convergence of rates and costs from DY1 to DY2, despite not re-basing their DY2 rates based on the DY1 cost reports.

Change from DY1 to DY2 was different in Oklahoma, the only PPS-2 state for which we have complete cost and rate data.²³ Rates exceeded costs by 9 percent in DY1 and by 18 percent in DY2. The reason for this increase in the gap between rates and costs is not clear. However, it should be noted that variation in per visit-month costs is substantially larger than variation in visit-day costs, making the PPS-2 costs more challenging to predict.

²³ New Jersey submitted cost reports for both demonstration years, but the reports included projected rather than actual costs and were therefore excluded from our analysis (because they are not comparable with those of other states).

Figure V.4. Average DY1 and DY2 Rates as Percentage Above or Below Average Demonstration Year Costs per Visit-Day or Visit-Month



Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 CCBHC cost reports.

Notes: A positive percentage indicates how much the rate was greater than the cost, and a negative percentage indicates how much the rate was less than the cost. Nevada did not submit cost reports for DY2. New Jersey submitted cost reports for both DYs, but the reports included projected rather than actual costs and were therefore excluded from our analysis (because they are not comparable with those of other states).

Visit-month for Oklahoma. Visit-day for Minnesota, Missouri, New York, Oregon, and Pennsylvania.

Appendix C presents clinic-level changes in costs and rates for each state.

There were at least two reasons why rates and costs diverged in DY1. First, state officials indicated in our interviews that the rates were set under the assumption that the CCBHCs would be fully staffed throughout the demonstration. Although state officials recognized that not all CCBHCs would be fully staffed at the outset of the demonstration, they set the rates under this assumption in order to avoid constraining hiring. If staff positions went unfilled for periods of time, the clinic would have lower costs than had been anticipated and their costs would be lower than their rate. Second, CCBHCs made efforts to increase access to services, including introduction of open-access systems where consumers could receive same-day appointments. As described below and reported in detail elsewhere (Breslau et al. 2019), most CCBHCs in the PPS-1 states experienced an increase in both their total number of visit-days and their costs per visit from DY1 to DY2, resulting in an increase of 13 percent in the aggregate costs of care at CCBHCs across all PPS-1 states. Despite the overall increase in visit-days and clinic operating costs, the daily and monthly rates more closely aligned with costs in DY2 than they did in DY1. CCBHCs in Oklahoma had an increase in costs, number of visit-months, and per visit-month costs from DY1 to DY2, but the costs did not align more closely with the rates in DY2 than they did in DY1.

E. Distribution of Certified Community Behavioral Health Clinic Costs

Across states, labor accounted for 65.6 percent of CCBHCs' cost in DY1, indirect costs accounted for 21.5 percent of CCBHCs' costs, other direct costs accounted for 11.5 percent of CCBHCs' costs, and DCOs only accounted for 1.4 percent of CCBHCs' costs. The distribution of cost in DY2 mirrored the distribution of DY1.

CCBHCs partnered with DCOs in five states (Missouri, New York, Oklahoma, Oregon, and Pennsylvania). As described in Chapter III, CCBHCs provided most services directly rather than through a contract with a DCO. CCBHCs typically contracted with DCOs to provide specialized services, such as crisis intervention. Among these states, the proportion of CCBHCs with DCO costs varied. For example, in Missouri, Pennsylvania, and New York, more than half of the CCBHCs had DCO costs in DY2, whereas only two of the 12 CCBHCs in Oregon had DCO costs.

Although the proportion of costs attributed to DCOs is small in the aggregate, there were some CCBHCs for which DCOs comprised a significant portion of total costs. In DY1, DCO costs exceeded 14 percent of the total costs for one clinic and 4 percent of total costs in an additional six clinics. For CCBHCs that had DCO costs in both demonstration years, DCO costs were relatively stable; ten CCBHCs experienced an increase of 5 percent or more in absolute DCO costs; seven experienced no increase or decrease greater than 5 percent, and only ten had a decrease of 5 percent or more in DCO costs.

F. Total State and Federal Medicaid and Children’s Health Insurance Program Expenditure for Certified Community Behavioral Health Clinics

Data from the CMS-64 reports provide information on total state and federal expenditures for CCBHC services. Total expenditures are a function of the number of visit-days (for PPS-1 states) or visit-months (for PPS-2 states) and the corresponding rates. Expenditures represent the costs to the federal or state government for operating CCBHCs, as opposed to the costs to the clinics, which are reflected in the cost reports. Although the expenditures are related to costs, they are not the same. For instance, if a clinic increased costs per visit in one year, the change would not be reflected in expenditures, since the expenditures would reflect rates based on the costs from the previous year. These total expenditures can inform future cost projections. CMS-64 reports do not provide information on expenditures for other (non-certified) community behavioral health clinics or the expenditures for CCBHCs prior to the demonstration.

	DY1		DY2	
	Total CCBHC Computable Expenditures	Federal Share of CCBHC Expenditures	Total CCBHC Computable Expenditures	Federal Share of CCBHC Expenditures
Minnesota	\$44,058,835	\$30,401,904	\$61,544,405	\$42,014,429
Missouri	\$289,897,916	\$218,625,541	\$360,485,354	\$273,562,348
Nevada	\$2,064,869	\$1,754,081	\$693,830	\$576,154
New York	\$57,306,067	\$37,248,944	\$155,043,243	\$101,944,373
Pennsylvania	\$50,445,454	\$36,263,597	\$56,733,276	\$41,954,395
New Jersey	\$21,606,853	\$17,255,195	\$32,352,448	\$25,578,398
Oklahoma	\$34,542,172	\$25,425,029	\$54,332,055	\$47,899,795

Source: Mathematica and RAND analysis of Form CMS-64 reports
Notes: Oregon not reported due to potential reporting anomaly.

As expected, total Medicaid/CHIP expenditures varied across states given differences in their implementation strategies, number of CCBHCs, and CCBHC caseloads (Table V.2). Total CCBHC Medicaid/CHIP expenditures increased from DY1 to DY2 in all states except Nevada. However, the total Medicaid/CHIP expenditures per CCBHC and per Medicaid/CHIP client also varied widely across states (Table V.3). For example, across PPS-1 states, DY1 Medicaid/CHIP expenditures ranged from \$516,217 per CCBHC in Nevada to over \$19 million per CCBHC in Missouri (however, Missouri CCBHCs had

multiple locations that served the majority of counties in the state), and expenditures per Medicaid/CHIP beneficiary ranged from \$1,621 in New York to \$4,092 in Missouri. For the two PPS-2 states, DY1 Medicaid/CHIP expenditures were about \$3 million per CCBHC in New Jersey and over \$11 million per CCBHC in Oklahoma. Likewise, the per beneficiary expenditures in New Jersey were lower than Oklahoma.

Table V.3. Average CCBHC Medicaid/CHIP Expenditures per CCBHC and Beneficiary				
	DY1		DY2	
	Average Total Computable CCBHC Expenditures per CCBHC	Average Total Computable CCBHC Expenditures per Beneficiary	Average Total Computable CCBHC Expenditures per CCBHC	Average Total Computable CCBHC Expenditures per Beneficiary
Minnesota	\$7,343,139	\$3,266	\$10,257,400	\$4,165
Missouri	\$19,326,528	\$4,092	\$24,032,357	\$5,061
Nevada	\$516,217	---	\$173,458	---
New York	\$4,408,159	\$1,621	\$11,926,403	\$3,944
Pennsylvania	\$7,206,493	\$3,682	\$8,104,754	\$3,371
New Jersey	\$3,086,693	\$2,005	\$4,621,778	\$2,766
Oklahoma	\$11,514,057	\$3,386	\$18,110,685	\$4,965

Source: Mathematica and RAND analysis of Form CMS-64 reports.

Notes: We divided the total computable Medicaid/CHIP expenditures by the total number of Medicaid/CHIP beneficiaries (including those dually enrolled in Medicare) that CCBHCs served in each DY (as reported with their quality measures) to calculate the average total computable expenditures per Medicaid/CHIP beneficiary. Nevada average total expenditures per beneficiary is not reported because the state did not report CCBHC caseload information with the quality measures. As a result, the table also does not report average total Medicaid/CHIP expenditures across states. Oregon not reported due to potential reporting anomaly.

In sum, there was wide variation within and across states in CCBHC rates and in the extent to which rates covered costs for individual CCBHCs. States anticipated that the rate-setting process would be challenging due to the lack of historical data on the costs of some required CCBHC services. The DY1 rates were, on average, higher than the DY1 costs in five of the six states for which cost data were available. However, the rate-setting process was designed to be self-correcting. Re-basing the rates (that is, using the cost reports for one year to set the rates for the next year rates) would bring the rates closer to costs. This is in fact what we observed for the PPS-1 states, where the average gap between rates and costs was smaller in DY2 than they were in DY1. However, we found that the gap between rates and costs increased between DY1 and DY2 in Oklahoma, the only PPS-2 state for which we have two years of cost and rate data. In both demonstration years, DCOs accounted for less than 1 percent of CCBHC costs, which reflected that CCBHCs decided to provide most services directly rather than through a contract with a DCO. In some states, the average cost per client increased from DY1 to DY2 as the average number of visit-days remained relatively stable, due to an increase in the average cost per visit-day. In other states, both the average number of visits and average cost per client declined from DY1 to DY2.

VI. IMPACTS ON MEDICAID SERVICE USE AND COSTS

The impact analyses examined how the introduction of the CCBHC model in three states (Missouri, Oklahoma, and Pennsylvania) affected service use and costs for Medicaid beneficiaries who were already receiving care from clinics that became CCBHCs relative to Medicaid beneficiaries with similar demographic and diagnostic characteristics who were receiving care from other non-CCBHC community behavioral health clinics in the state. These analyses examined the impact of the CCBHC model on hospitalization rates, ED visits, and the use of ambulatory care. For one state (Oklahoma) we were able to examine the impact of the CCBHC model on Medicaid costs.

Although changes in service use do not necessarily reflect changes in access to care or the quality of care, the findings from these analyses are important to understand how this new model of delivering and reimbursing services affects the broader health care system. Hospitalizations and ED visits are typically viewed as unfavorable outcomes from a health system perspective. CCBHCs' efforts to increase access to care and deliver new services could potentially result in the identification of untreated conditions and increase the use of these types of services. Conversely, providing more comprehensive ambulatory care to CCBHC clients could decrease the use of the ED and lower hospitalization rates.

This chapter describes the characteristics of Medicaid beneficiaries included in the analysis and the findings for each state.

A. Analytic Populations Included in Impact Analyses

The characteristics of Medicaid beneficiaries varied across states. As described in Chapter II, we compared the characteristics of beneficiaries selected for the treatment and comparison group in each state and then used propensity score weighting or adjustment to ensure that the treatment and comparison groups were similar at baseline.

Characteristics before treatment and comparison group assignment. Across the three states, over half of beneficiaries in the analytic sample were female.²⁴ The population in Missouri was, on average, older (mean age = 31 years) than the populations in Oklahoma (mean age = 24 years) and Pennsylvania (mean age = 25 years). The racial composition of the populations varied by state, but White was always the majority. Oklahoma had a much higher proportion of beneficiaries in the “other” race category (25 percent) relative to other states. This group may have included beneficiaries who identified as American Indian.²⁵ More than half of the Missouri study population was disabled compared to only approximately one-quarter of the population in Oklahoma and Pennsylvania. Most beneficiaries lived in a suburban zip code in all states.

In all three states, approximately three-quarters of the population had a diagnosis of anxiety, bipolar disorder, depressive disorders, or schizophrenia and other psychotic disorders during the baseline period (ranging from 66 percent in Pennsylvania to 83 percent in Missouri), and one-quarter had an SUD diagnosis during that time (ranging from 22 percent in Missouri to 25 percent in Pennsylvania). The most

²⁴ Point-in-time characteristics such as age were calculated as of the start month of the demonstration, which varied by state. Diagnostic characteristics were calculated using claims from the two-year baseline period. See Appendix D, Table D.2 for more information about the measure specifications.

²⁵ CCBHCs in Oklahoma reported that 8 percent of their clients identified as Native American in the client information submitted with the quality measures (clients who identified as Native American represented 1 percent or less of CCBHC clients in Missouri and Pennsylvania).

common SUD condition in all three states was drug use disorders, followed by alcohol use disorders in Missouri and Oklahoma and opioid use disorder in Pennsylvania.

Beneficiaries in our analytic sample had rates of chronic physical health conditions comparable to previous studies (Bouchery et al. 2018), including hypertension, asthma, hyperlipemia, and diabetes (Table VI.1). The mean CDPS score among our analytic population was 2.6 in Missouri and about 2.0 in Oklahoma and Pennsylvania. All three mean scores suggest that expected costs to Medicaid was at least two times higher than average costs for Medicaid populations.

Comparability between treatment and comparison groups. Prior to the propensity score matching or weighting (depending on the state), there were some differences between the treatment and comparison groups in each state. However, propensity score adjustment generally resolved these differences and resulted in groups that were well-balanced in their demographic and diagnostic characteristics and baseline service use trends. After propensity score adjustment, all weighting or matching variables were within 0.1 standardized differences, and trends in baseline outcomes were mostly parallel between treatment and comparison groups. (See Appendix D, Tables D.3-D.5 for pre and post-adjustment balance tables and final treatment and comparison beneficiary counts by state). Although the treatment and comparison group were comparable on key characteristics and there was adequate sample size to detect impacts, it is possible that the final population included in the comparison group differed from those in the CCBHC group on characteristics that were not measurable using Medicaid data. This may have been particularly applicable for Missouri, which implemented the CCBHC model to serve to majority of counties in the state. As a result, most beneficiaries in our initial analytic sample were assigned to the treatment group and those not assigned to the treatment group could have been systematically different from those in the treatment group on some characteristics not observable in Medicaid data. We did, however, consult with state officials to inform our selection of the comparison group in each state.

Generalizability of study population to consumers of CCBHCs and comparison clinics. Beneficiaries in the final analytic sample are limited to those who received care at clinics that became CCBHCs and other community behavioral health clinics before the demonstration. This population may not be representative of the full population of beneficiaries served by CCBHCs or comparison clinics. CCBHCs expanded services and began serving new populations during the demonstration. For example, CCBHCs in Pennsylvania expanded their SUD services to populations they did not serve prior to the demonstration. As a result, the findings for all states are limited to a subset of beneficiaries who were engaged in care at clinics that became a CCBHC or a comparison clinic before the demonstration. However, the characteristics of the final analytic sample were similar to the broader population of Medicaid beneficiaries who received care from these clinics in the baseline period. The main differences across all three states were that the final sample was younger and less disabled, likely due to our exclusion of beneficiaries who were dually enrolled in Medicaid and Medicare because we did not have their Medicare claims. In Oklahoma, the final analytic sample was younger and included a higher proportion of female beneficiaries, a lower proportion of beneficiaries who identified as White, and a higher proportion who identified as “other” race relative to the broader population served in the clinics, but we cannot identify the source of these differences.²⁶

²⁶ Fifty-five percent were age 19 and under in our final analytic sample compared to 26 percent for the broader population of beneficiaries who received care from clinics that became CCBHCs in the baseline period.

Table VI.1. Demographic and Health Characteristics of Medicaid Analytic Population in Each State

Characteristic ^a	Missouri		Oklahoma		Pennsylvania ^j	
	Number	Percent	Number	Percent	Number	Percent
Total	21,453	100	36,866	100	186,414	100
Female	11,625	54	21,393	58	97,054	52
Age <=19	8,397	39	20,077	55	89,208	48
White	16,837	79	22,925	62	116,355	62
Black/African American	3,797	18	4,869	13	41,892	23
Other race ^b	819	4	9,072	25	28,167	15
Disabled ^c	12,017	56	7,662	21	47,002	25
Urban	1,307	6	1,886	5	34,397	19
Suburban	17,005	79	29,594	80	150,426	81
Rural	3,124	15	5,269	14	1,591	1
Ever in managed care during 2-year baseline period ^d	9,538	45	24,758	67 ⁱ	145,176	78
Any behavioral health condition^e	18,054	84	28,654	78	130,737	70
Any mental health condition^e	17,826	83	27,765	75	123,541	66
Anxiety	12,136	57	18,310	50	78,918	42
Bipolar disorder	8,935	42	9,843	27	46,660	25
Depressive disorders	10,618	50	17,014	46	79,385	43
Schizophrenia and other psychotic disorders	4,724	22	5,801	16	18,619	10
Any SUD^f	4,763	22	8,347	23	45,700	25
Alcohol use disorders	1,979	9	2,140	6	16,807	9
Drug use disorders	3,898	18	7,429	20	39,861	21
Opioid use disorder	1,069	5	1,984	5	22,498	12
Any physical health condition^h	10,248	48	11,993	33	72,555	39
Asthma	2,785	13	4,873	13	33,448	18
COPD	3,073	14	2,575	7	9,938	5
Diabetes	2,823	13	2,309	6	11,367	6
Heart disease	1,288	6	1,428	4	6,697	4
Hypertension	5,445	25	5,355	15	24,564	13
Hyperlipidemia	2,903	14	2,717	7	17,995	10
Obesity	2,467	12	3,668	10	30,700	17
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Age	30.8	17.7	23.7	15.5	25.1	15.3
CDPS score	2.6	1.8	2.0	1.6	2.1	1.6

Source: Mathematica analyses of Medicaid enrollment, claims, and demographic data provided by the states of Missouri, Oklahoma, and Pennsylvania.

Notes: The table summarizes the demographic and diagnostic characteristics of the study populations before assigning beneficiaries to treatment and comparison groups and conducting weighting/matching.

- a. Point-in-time characteristics such as age were calculated as of the start month of the demonstration, which varied by state. Diagnostic characteristics were calculated by looking at claims from throughout the 2-year baseline period. Please see Appendix D, Table D.2 for more information about how we calculated measures.
- b. "Other race" includes all race categories other than White and Black. The number of categories included in Medicaid enrollment data varied by state.
- c. Determined using Medicaid eligibility codes (Missouri and Oklahoma) or other state-provided data (Pennsylvania).
- d. Defined as ever having a managed care claim in the 2-year baseline period.
- e. Includes any of the 4 mental health-related chronic condition categories: anxiety, bipolar disorder, depressive disorders, or schizophrenia and other psychotic disorders.
- f. Includes any of the 3 SUD-related chronic condition categories: alcohol use disorder, drug use disorder, or opioid use disorder.
- g. Includes any of the SUD-related chronic condition categories and the mental health-related chronic condition categories.
- h. Includes any of the 7 physical health-related chronic condition categories: asthma, COPD, diabetes, heart disease, hypertension, hyperlipidemia, or obesity.
- i. Although Oklahoma is a majority FFS state, most beneficiaries are enrolled in the state's primary care case management program.
- j. The Pennsylvania population includes the full comparison pool, prior to applying the exact matching criteria. Approximately 30,000 of these beneficiaries were later dropped from the analysis due to our exact match criteria (see section above for more detail about matching in Pennsylvania).

B. Impacts on Medicaid Service Use

In all three states, beneficiaries in both the treatment and comparison group typically had higher rates of hospitalizations and ED visits during the baseline period than the demonstration period. We expected to observe this trend given that our impact analyses were limited to beneficiaries who were already receiving care from either a clinic that became a CCBHC or a comparison clinic prior to the demonstration. As a result, beneficiaries in the analytic sample may have had behavioral or physical health conditions that improved over time and required fewer services.

The introduction of the CCBHC model impacted service use differently in each state (Table VI.2):

- In Missouri, the number of behavioral health-related ambulatory visits increased 5.7 percent among CCBHC clients relative to the comparison group. The demonstration did not impact hospitalization rates or ED visits.
- In Pennsylvania, there was a 7.4 percent reduction in the average number of physical health-related ambulatory visits and a 9.9 percent reduction in the average number of behavioral health-related ambulatory visits among CCBHC clients relative to the comparison group. CCBHC clients did not differ from the comparison group in their probability of having any ED visit during the demonstration, but there was a 13 percent reduction in the average number of behavioral health-related ED visits among CCBHC clients relative to the comparison group (in other words, the likelihood of any ED visit was not different between the two groups but CCBHC clients had fewer behavioral health-related ED visits over time relative to the comparison group). The demonstration did not impact hospitalization rates.
- In Oklahoma, there was a 3 percent reduction in the number of physical health-related ambulatory visits among CCBHC clients relative to the comparison group, but there was no impact on ambulatory behavioral health-related visits. CCBHC clients had a higher probability of any ED visit during the demonstration relative to the comparison group. However, there was an 11 percent reduction in the average number of behavioral health-related ED visits among CCBHC clients relative to the comparison group (in other words, although the probability of having an ED visit was higher among CCBHC clients, they had fewer behavioral health-related ED visits over time relative to the comparison group). Finally, CCBHC clients had a lower probability of hospitalization relative to the comparison group during the demonstration, but the demonstration did not impact the average number of hospitalizations. This could, reflect, in part, relatively low hospitalization rates in this state, which could make it difficult to detect changes in average rates.

In Appendix D, Tables D.6-D.8, we provide the impact estimates for the full analytic sample in each state. Unless otherwise noted, the findings did not differ for children/adolescent versus adults or those with or without SUDs.

Table VI.2. Summary of Impacts over the 2-Year CCBHC Demonstration Period			
	Missouri	Oklahoma	Pennsylvania
Measures			
Number of inpatient hospitalizations per 1,000 beneficiary years, by type			
All-cause	No impact	No impact ^a	No impact ^b
Behavioral health-related	No impact	No impact ^a	No impact ^b
Physical health-related	No impact	No impact ^a	No impact ^b
Probability of inpatient stay	No impact	Decreased***	No impact
Number of ED visits per 1,000 beneficiary years, by type			
All-cause	No impact	No impact	No impact
Behavioral health-related ^c	No impact	Decreased*	Decreased*
Physical health-related	No impact	No impact	No impact
Probability of ED visit	No impact	Increased***	No impact
Number of ambulatory visits per 1,000 beneficiary years, by type			
All-cause	No impact	No impact ^d	Decreased***
Behavioral health-related ^c	Increased***	No impact ^d	Decreased***
Physical health-related	No impact	Decreased*	Decreased***
Medicaid costs			
Total costs	n/a	Increased***	n/a
Costs by service type			
Inpatient costs	n/a	No impact	n/a
ED costs	n/a	No impact	n/a
Ambulatory visit costs	n/a	Increased***	n/a
Source: Mathematica analyses of Medicaid enrollment and claims data provided by the states of Missouri, Oklahoma, and Pennsylvania.			
Notes: The number of ED visits was measured as one visit per day and can be interpreted as ED visit-days.			
a. As described in the text, results were sensitive to specification. Though we found no statistically significant impact in the main analyses, we found the treatment group had statistically significant decreases in hospitalizations when we used the full 2-year baseline period ($p < 0.05$ for all analyses).			
b. Results were sensitive to specification. We found no impact on all-cause hospitalizations over the full two-year period. We also found no impact when we used a 2-year baseline period. When we truncated the number of hospitalizations at the 98th percentile, however, the treatment group had a borderline statistically significant relative decrease ($p = 0.06$) in the number of all-cause hospitalizations over the 2-year demonstration period and in the first year ($p = 0.05$).			
c. We identified stays and visit-days as behavioral health-related by looking at the primary diagnosis code on the claim. For more information on measure construction, see Appendix D, Table D.2.			
d. In Oklahoma during the demonstration period, CCBHCs were only required to submit one claim per month per beneficiary, consistent with the PPS-2 model. Therefore, we assessed changes in the number of months with any ambulatory service and any behavioral health ambulatory service rather than visit-days.			
* Significantly different from zero at the 0.10 level, two-tailed test.			
** Significantly different from zero at the 0.05 level, two-tailed test.			
*** Significantly different from zero at the 0.01 level, two-tailed test			

Hospitalizations. There was some evidence that the demonstration impacted hospitalizations, but the direction and statistical significance of these impacts varied by state and subgroup.

- In Oklahoma, the demonstration was associated with a lower probability of hospitalization for any reason (12 percent among CCBHC clients compared to 14 percent among the comparison group during the demonstration period, $p < 0.01$).²⁷ The demonstration was not associated with statistically

²⁷ Although the difference between 12 percent and 14 percent seems modest, it represents an 18 percent difference in any hospital use when we divide the impact estimate by the comparison group mean (-2.6/14).

significant changes in the number of hospitalizations except in sensitivity analyses; when we used a two-year baseline period, beneficiaries who received care from CCBHCs had significant decreases in all-cause hospitalizations, behavioral health hospitalizations, and physical health hospitalizations relative to the comparison group ($p < 0.05$ for all analyses). The impacts on hospitalizations may have been concentrated among beneficiaries without SUD and children/adolescents. When we stratified our sample by the presence of an SUD in the baseline period, among beneficiaries without an SUD we found a greater decrease in the number of behavioral health hospitalizations (but not all-cause or physical health hospitalizations) for the treatment group relative to the comparison group ($p < 0.10$); this finding did not hold for beneficiaries with an SUD. Among the child/adolescent subgroup, we found a greater decrease in the number of all-cause hospitalizations ($p < 0.10$) and behavioral health hospitalizations ($p < 0.05$) for the treatment group relative to the comparison group; this finding did not hold for the adult subgroup. Oklahoma had a larger proportion of child beneficiaries than the other states (see Table VI.1 above), which may have contributed to the subgroup findings.

- In Pennsylvania, the demonstration was not associated with the probability of hospitalization or a change in the number of hospitalizations. However, when we truncated the number of all-cause hospitalizations at the 98th percentile, beneficiaries who received care from CCBHCs had a 10 percent decrease in all-cause hospitalizations relative to the comparison group ($p = 0.06$). We found a marginally significant decrease in any hospital use for treatment beneficiaries among the subgroup with SUD ($p = 0.09$), but not among the subgroup without SUD. Pennsylvania had a higher proportion of beneficiaries with SUD, especially opioid use disorder, than the other states (see Table VI.1 above), which may help explain this finding. The findings for the subgroups of adults and children/adolescents did not differ from the full analytic population.
- In Missouri, the demonstration was not associated with the probability of hospitalization or a change in the number of hospitalizations. Among beneficiaries without SUD in the baseline period, the demonstration was associated with a significant increase in the number of all-cause hospitalizations ($p < 0.05$). We did not find this among beneficiaries with an SUD in the baseline period.

ED visits. There was some evidence that the demonstration impacted ED visits in Oklahoma and Pennsylvania, but we do not have evidence of these impacts for Missouri for the full analytic population.

- In Oklahoma, the demonstration was associated with a higher probability of an ED visit (67 percent of CCBHC clients had at least one ED visit during the demonstration period compared to 63 percent for the comparison group, $p < 0.01$).²⁸ However, there was an 11 percent reduction in the number of behavioral health ED visits among CCBHC clients relative to the comparison group ($p < 0.10$). Behavioral health ED visits accounted for 10 percent or less of all ED visits in any year, which might explain how a decrease in the number of behavioral health ED visits might not result in a decrease in the number of all-cause ED visit or the probability of any ED visit.²⁹
- In Pennsylvania, the demonstration was not associated with the probability of an ED visit, but there was some evidence of an impact on the number of behavioral health ED visits. Specifically, the demonstration was associated with a 13 percent reduction in behavioral health ED visits among CCBHC clients relative to the comparison group ($p < 0.10$).

²⁸ This represents a 7.5 percent difference when we divide the impact estimate by the comparison group mean (4.7/63).

²⁹ For example, the treatment group had a mean of 1,672 ED visits per 1,000 beneficiary years during the baseline period. Of those ED visit, 170 were behavioral health-related and 1,502 were physical health-related.

- In Missouri, the demonstration was not associated with the probability of any ED visit or a change in the number of ED visits. In subgroup analyses, among beneficiaries with an SUD in the baseline period, the demonstration was associated with a 34 percent increase in the mean number of behavioral health ED visits among CCBHC clients relative to the comparison group ($p < 0.01$), but we did not find a significant difference among beneficiaries without SUD in the baseline period.

Ambulatory visits. There was evidence that the demonstration impacted ambulatory visits in all states, but the direction and magnitude of the impacts varied by state and type of ambulatory visit.³⁰

- In Oklahoma, the demonstration was not associated with a change in the total months with any ambulatory visit or behavioral health ambulatory visit among CCBHC clients relative to the comparison group. However, the demonstration was associated with a 3 percent reduction in physical health visits among CCBHC clients relative to the comparison group ($p < 0.10$). The findings for the child/adolescent subgroup and beneficiaries without SUD mirrored the full analytic population, while there was no statistically significant impact on physical health ambulatory visits for adults and beneficiaries with SUD in the baseline period.
- In Pennsylvania, the demonstration was associated with a change in all types of ambulatory visit-days. Total ambulatory visit-days, physical health-related visit-days, and behavioral health-related visit-days all decreased over time for both the treatment and comparison group but decreased more for the treatment group than the comparison group (all $p < 0.01$). For example, the demonstration was associated with a 24 percent reduction in visit-days to CCBHCs and a 10 percent reduction in all behavioral health-related ambulatory visit-days.
- In Missouri, both the treatment and comparison groups experienced an increase in ambulatory visit-days over time. There was no differential change between the two groups across *all* ambulatory visit-days over time, but the demonstration was associated with a 6 percent increase in *behavioral health* ambulatory visit-days for CCBHC clients relative to the comparison group ($p < 0.01$). The demonstration was associated with a greater than 200 percent increase in visit-days to CCBHCs (or 14,832 more visit-days per 1,000 beneficiary years) ($p < 0.01$), suggesting CCBHCs greatly expanded the number of daily visits as a result of the demonstration. These findings were consistent for the child/adolescent and adult subgroups, and the subgroups with and without SUD. In addition, the subgroup without SUD experienced a statistically significant 4 percent increase in *total* ambulatory services relative to the comparison group ($p = 0.05$).

CCBHC clients in Missouri shifted their ambulatory behavioral health care toward the CCBHCs during the demonstration, whereas this did not happen in Pennsylvania.³¹ Specifically:

- In Missouri, prior to the demonstration, approximately 19 percent of all ambulatory behavioral health visit-days among the treatment group were at clinics that became CCBHCs. Likewise, about 15 percent of all ambulatory behavioral health visit-days among the comparison group were at community behavioral health clinics that did not become CCBHCs. During the demonstration, about 55 percent of ambulatory behavioral health visit-days among the treatment group occurred at

³⁰ We measured ambulatory visit-days rather than individual ambulatory procedures/services because CCBHCs were only required to submit one PPS claim per day for each beneficiary who visited the clinic that day in Missouri and Pennsylvania, and one PPS claim per month for each beneficiary who visited the clinic anytime during the month in Oklahoma.

³¹ We did not examine shifts in ambulatory visits in Oklahoma because those CCBHCs were only required to submit one claim per month per beneficiary, and, therefore, the claims did not facilitate measuring counts of visits beyond a monthly visit.

CCBHCs, whereas the comparison clinics continued to account for about 15 percent of all ambulatory behavioral health visit-days for beneficiaries in the comparison group. This finding further supports the finding highlighted above that Missouri CCBHCs seem to have greatly expanded daily visits under the demonstration.

- In Pennsylvania, prior to the demonstration, for both the treatment and comparison group, about 32 percent of all ambulatory behavioral health visit-days occurred at clinics that became CCBHCs and comparison clinics, respectively. During the demonstration, only 21 percent of ambulatory behavioral health visit-days occurred at CCBHCs among the treatment group, and 25 percent of these visit-days were at community behavioral health clinics that were not CCBHCs among the comparison group. In this state, there was not a shift toward CCBHCs or community behavioral health clinics accounting for more visit-days during the demonstration compared to before the demonstration.

These changes in service use are not necessarily indicative of better or worse care but illustrate how the CCBHC model may function differently across states. In both states, however, beneficiaries who received care from CCBHCs continued to have a substantial number of daily ambulatory behavioral health visits outside of the CCBHC. Some of these other community providers could have been CCBHC partners that did not bill under the PPS (as few were DCOs), or they could have provided specialized services beyond the required CCBHC services. However, we cannot directly measure whether the visit-days were with CCBHC partners using claims data alone, and we do not have further information on the types of other providers that beneficiaries visited.

C. Impacts on Costs

Because of widespread use of managed care and incomplete cost data for managed care enrollees in Missouri and Pennsylvania, we were only able to measure Medicaid costs in Oklahoma. In this state, we found that total costs increased significantly more for the treatment group than the comparison group during the demonstration period. This was true for each year of the demonstration and over both years combined. Over the full two-year demonstration period, average total costs to Medicaid was \$3,229 per beneficiary per month (PBPM) for the treatment group compared to \$2,619 PBPM for the comparison group—a 30 percent difference. This reflected an average increase from the baseline period of \$548 PBPM for the treatment group but an average decrease of \$228 for the comparison group.

The increased costs for the treatment group was driven by increased costs for ambulatory visits, particularly CCBHC visits. Costs for all behavioral health visits (both CCBHC and non-CCBHC visits) increased by an average of \$770 PBPM for the treatment group from the baseline period through the demonstration but decreased by an average of \$79 for the comparison group over the same period. Costs for the clinics that became CCBHCs increased by an average of \$784 PBPM, whereas average costs for services delivered by comparison clinics did not change from baseline through the demonstration. This change in ambulatory behavioral health costs was comparable to the average standard monthly payment rate for CCBHCs during the demonstration (\$676 per month in DY1 and \$787 per month in DY2; see Figure V.2 in Chapter V), suggesting that the entire amount of the PPS payment rate went to new costs that did not exist before the demonstration. The direction of these findings was consistent among beneficiaries with and without SUD and for children/adolescents and adults.

The findings from Oklahoma are not generalizable to other states for several reasons. Oklahoma reimburses almost all Medicaid services on an FFS basis whereas in most other states the majority of Medicaid services are delivered through managed care arrangements. Oklahoma also reimbursed CCBHCs using the monthly PPS-2 model, which is more complicated than the PPS-1 model used in most

of the other states because it includes rates for special populations and outlier payments. Oklahoma was also the only state in which adjustments to the second year payment rates resulted in CCBHCs being paid more, on average, than their costs in the second year relative to the first year. Finally, there were only three CCBHCs in Oklahoma, which served a demographically different population than other states. These characteristics of the state do not compromise the validity of the cost impact findings, but they should not be applied to other states. Complete cost data for services delivered through managed care arrangements would facilitate cost impact estimates in other states.

D. Summary

The introduction of the CCBHC model impacted service use differently in each state. This variation in findings could reflect differences in how the model was implemented across states as well as other state contextual factors. There were also differences across states in some demographic and diagnostic characteristics. For example, relative to the other two states, Missouri had a higher proportion of beneficiaries who were disabled and older and had higher rates of hypertension, diabetes, and COPD. Oklahoma had a younger population than other states and a much larger population of beneficiaries in the “other” racial/ethnic group compared to other states, perhaps reflecting the states’ larger relative Native American population. Finally, the proportion of beneficiaries with an opioid use disorder in Pennsylvania was more than twice the proportion in the other two states. Although we cannot definitively conclude that these state-level contextual characteristics account for the differences across states in the impact findings, they underscore that the CCBHC model was implemented in very different communities.

Overall, the subgroup findings did not suggest that the CCBHC model systematically impacted service use differently for beneficiaries with SUD and for children/adolescents across states. As with the findings for the full analytic population, subgroup findings differed by state. For example, among beneficiaries without an SUD in the baseline period, those who received care from CCBHCs had greater reductions in hospitalizations than those with an SUD in Oklahoma, but the opposite was true in Missouri. Pennsylvania had the fewest subgroup differences.

In Oklahoma, the introduction of the CCBHC model increased total cost of care, which was driven by increased costs for CCBHC services. It is possible that the two-year period was too short to observe reductions in other costs to Medicaid that might eventually offset those costs, as there were indications that hospitalizations and ED visits were declining among the CCBHC clients more than the comparison group. As noted above, the findings from Oklahoma do not generalize to other states.

VII. SUMMARY OF KEY FINDINGS AND RECOMMENDATIONS

The CCBHC demonstration allowed states to test a new strategy for delivering and reimbursing services in community behavioral health clinics. In each state, the demonstration involved establishing new prospective payment mechanisms, expanding services, developing partnerships between providers, and reporting quality measures. Although the criteria established a general framework for the demonstration, states had flexibility to tailor the demonstration to align with state delivery systems and needs of the communities served by CCBHCs. As a result, implementation of the demonstration varied across states. Despite this variation in implementation strategies, there are some overarching findings that can help to refine the CCBHC model and inform efforts to support implementation of this model in the future.

A. Summary of Findings Relevant to the Protecting Access to Medicare Act

Section 223 of PAMA mandates that HHS's reports to Congress include: (1) an assessment of access to community-based mental health services under Medicaid in the area or areas of a state targeted by a demonstration program as compared to other areas of the state; (2) an assessment of the quality and scope of services provided by CCBHCs as compared to community-based mental health services provided in states not participating in a demonstration program and in areas of a demonstration state that are not participating in the demonstration; and (3) an assessment of the impact of the demonstration on the federal and state costs of a full range of mental health services (including inpatient, emergency, and ambulatory services). Here we provide a brief summary of the main findings within each of these areas.

Access to community-based mental health services. CCBHCs implemented a wide range of activities to increase access to care. These activities included, for example, expanding operating hours, accommodating same-day and walk-in appointments, providing care to individuals regardless of their ability to pay, outreach to underserved populations, and moving service delivery beyond the clinic walls to reach people in their homes and communities. CCBHCs also established and sustained partnerships with external providers to facilitate referrals and coordinate care. According to state officials, these efforts to expand access to care were unique to CCBHCs relative to other community behavioral health clinics in the state. In several states, wait-times for initial evaluations at CCBHCs substantially improved during the demonstration.

The number of clients served by CCBHCs increased from the first to the second demonstration year, suggesting that efforts to increase access to care may have been successful at drawing in new clients. Consistent with this finding, CCBHCs in the three states for which we had Medicaid data (Missouri, Oklahoma, and Pennsylvania) served many clients during the demonstration who did not have claims at these clinics in the two years prior to the demonstration.

The introduction of the CCBHC model affected the use of ambulatory behavioral health services differently across these three states. In Oklahoma, there was no impact on per-month behavioral health visits among existing CCBHC clients relative to the comparison group. In Missouri, the use of ambulatory behavioral health services increased for existing CCBHC clients relative to the comparison group after the introduction of the model, and it appeared that CCBHC clients shifted their behavioral health service use toward the CCBHCs and away from other behavioral health providers over time. Pennsylvania had the opposite experience: there was an overall decrease in ambulatory behavioral health visits among existing CCBHC clients relative to the comparison group after the introduction of the model, and no shift toward the use of CCBHCs away from other behavioral health providers. Changes in ambulatory service use do not necessarily indicate better or worse access to care. In the context of this

demonstration, in which CCBHCs are paid either a daily or monthly rate to provide comprehensive services, an increase in daily or monthly ambulatory visits among CCBHC clients could indicate that CCBHCs are providing needed services. A decrease in daily or monthly ambulatory visits among CCBHC clients could indicate that CCBHCs are able to provide the necessary services in fewer visits. Theoretically, the delivery of more comprehensive services (regardless of changes in the number of visits) might correspond with a decrease in ED visits or hospitalization rates. However, across these states, there was no consistent pattern in the relationship between changes in ambulatory visits and ED visits. The demonstration also did not impact hospitalization rates in any state.

Some evaluation design challenges inherent to quasi-experimental studies may limit the generalizability of the impact findings. As described in Chapter II, the impact analysis followed a longitudinal cohort of beneficiaries. While this design was the strongest to guard against misattributing impacts to changes over time in CCBHC case-mix, it required limiting the analytic population to only those who were enrolled in Medicaid and receiving care from these clinics prior to the demonstration. This limitation affected the representativeness of the final analytic population differently in each state. Although it does not compromise the validity of the findings, they are best interpreted as the impacts among beneficiaries who were already engaged in care. As the demonstration continues and expands to other states, there may be opportunities to implement alternative evaluation design strategies.

Consumer and family representatives credited the demonstration with increasing access to care. These stakeholders praised efforts to accommodate same-day appointments and expand service hours and noted that consumers experienced much shorter wait-times for appointments. These stakeholders also perceived that providing mental health and SUD services for both adults and children at the same location facilitated greater access to comprehensive services for whole families, noting that CCBHCs became more family-oriented environments that offer care to children and their parents. These stakeholders reported that the inclusion of peer support staff in the CCBHC model was critical to engaging consumers and families in treatment. Overall, consumers had positive perceptions of the care provided by CCBHCs, as reported in the quality measures.

Quality and scope of services. Nearly all clinics expanded or added services to meet the CCBHC certification requirements. They most often added psychiatric rehabilitation services, crisis services, peer support, intensive community-based mental health services for members of the armed forces and veterans, primary care screening and monitoring, and TCM. CCBHCs also offered a wide range of EBPs consistent with the CCBHC certification criteria. All or nearly all CCBHCs provided motivational interviewing, individual and group CBT, DBT, evidence-based medication evaluation and management, MAT for alcohol and opioid use, and community wraparound services for youth/children. They also provided a range of rehabilitative services such as supportive employment and supportive housing. According to state officials, CCBHCs provided a more comprehensive and broader range of services relative to other community behavioral health clinics in the state. CCBHCs were generally able to sustain the delivery of these services throughout the demonstration.

CCBHCs hired a range of staff to meet the certification requirements and provide new services. CCBHCs most often hired case managers, peer specialists/recovery coaches, psychiatrists, and family support workers. Despite some initial challenges in hiring some types of staff, most CCBHCs were able to retain these staff over the two years of the demonstration. However, some CCBHCs did experience challenges with staff hiring and retention toward the end of the demonstration due, in part, to uncertainty about future funding.

Overall, the quality of care provided to CCBHC clients was comparable to available benchmarks or exceeded benchmarks for some measures. Performance on some measures also improved from the first to second demonstration year, depending on the state. In general, measures focused on processes of care within CCBHCs (such as screening and follow-up care for specific conditions) improved more over time than measures of care transitions and medication management and adherence (reported using claims data). These improvements may reflect some of the changes that CCBHCs continued to make during the demonstration to meet the certification criteria, including implementing new screening tools or changing other processes of care. CCBHCs and states made some of these changes in response to performance on the quality measures during the first year. Some CCBHCs also made changes to how the data for the quality measures were collected in the second demonstration year, including enhancements to EHRs and other data systems, which could have influenced changes in performance rates. In contrast, states did not have to make major changes to their data systems to report the claims-based measures, which could be one reason performance on these measures was relatively stable over time. The stability of the claims-based measures may also reflect that several of the measures assess concepts that require CCBHCs to have partnerships and communicate with hospitals or other entities (for example, measures that assess follow-up after ED visits or discharge from the hospital). Changing performance on these types of measures may require more time to implement new data systems, data sharing agreements, and communication protocols, all of which also require engagement of these external partners. There were some indications from the data that CCBHCs had somewhat inconsistent relationships with these types of partners. For example, in the second demonstration year, about one-quarter of CCBHCs reported that they did not routinely receive notifications from EDs or hospitals when a client in their care was treated for behavioral health conditions in these settings. There may be a need to focus on forging stronger relationships between hospitals and CCBHCs in the future.

Among the three states in the impact analysis (Missouri, Oklahoma, and Pennsylvania), no state experienced an increase in physical health hospitalizations or ED visits among CCBHC clients relative to the comparison group; in two states (Oklahoma and Pennsylvania) ambulatory physical health visits decreased more for CCBHC clients than the comparison group. This is a notable finding given that CCBHCs were required to provide primary care screening and monitoring, which could potentially translate into more use of physical health care. These finding could suggest that CCBHCs were able to implement primary care screening and monitoring without increasing the use of physical health services. However, the quality measures reported by CCBHCs and states offer some indications that attention to physical health conditions was uneven across CCBHCs. Depending on the state, about one-quarter to one-half of adults did not receive weight or BMI screening in the second demonstration year, and about one-quarter of adults who received antipsychotics did not have evidence of diabetes screening. However, these measures provide a limited view into all the different types of primary care screening and monitoring that CCBHCs may have conducted, and we do not have other data on screening rates or the frequency of monitoring to directly observe the impact of these activities on service use.

It is notable that in both Missouri and Pennsylvania (the only states where we could measure daily visits in the Medicaid claims data), clients who received care from CCBHCs continued to receive ambulatory behavioral health care from other providers during the demonstration. There are a few possible explanations for this finding. It is possible that some portion of these services provided outside of the CCBHC were delivered by CCBHC partners but billed separately (however, we cannot measure this directly in claims data). Some clients may have also needed to seek care elsewhere for services that were not included in the CCBHC criteria. These findings could also reflect client preferences about where to seek certain types of care.

Impact of the demonstration on federal and state costs. Average Medicaid/CHIP expenditures per CCBHC client varied widely across states. Likewise, there was wide variation across states in the average total costs of CCBHC services per client. This variation is likely driven by local costs (such as salary differences) and differences across states in the use of CCBHC services. These findings can inform future cost projections for the demonstration or similar prospective payment models for community behavioral health providers.

During the first demonstration year, average CCBHC payment rates were higher than CCBHC costs in four states (Minnesota, Missouri, New York, and Pennsylvania) but about the same or lower than costs in two states (Oklahoma and Oregon).³² However, the extent to which the payment rates covered costs for an individual CCBHC varied within states, and not all CCBHCs had their costs covered. In all states except Oklahoma, the payment rates more closely aligned with costs in the second demonstration year. The flexibility to increase or decrease the second-year payment rates based on the first-year costs allowed some states to align payment rates and costs over time.

In Oklahoma, the demonstration resulted in a significant increase in total Medicaid costs among CCBHC clients relative to the comparison group, which was driven by an increase in ambulatory spending rather than hospitalizations or ED costs. Although CCBHC clients in Oklahoma had a slightly lower probability of any hospitalization during the demonstration and a modest decrease in behavioral health ED visits relative to the comparison group, those changes in service use did not translate into impacts on hospital or ED costs or offset the increase in costs for ambulatory behavioral health care. As noted in Chapter VI, the cost impact findings from Oklahoma are not generalizable to other states.

Due to the managed care arrangements in Missouri and Pennsylvania, we could not directly measure Medicaid costs in those states, but the service use findings could inform future spending projections. In Pennsylvania, there was limited evidence suggesting that the introduction of the CCBHC model might have reduced the probability of an inpatient stay and behavioral health-related ED visits, and there was strong evidence that the demonstration reduced both physical and behavioral health ambulatory care visits. Finally, in Missouri, there was no evidence that the model reduced hospitalizations or ED visits. These findings, however, should be interpreted within the context of several limitations of the data and account for the state-specific implementation context, described in Chapter II.

B. Recommendations

Several lessons from the demonstration could help inform refining the CCBHC model and guide implementation in the future. In this final section of the report, we provide recommendations based on our observations across states.

Continue federal and state agency oversight and provide technical assistance to support implementation. During the planning phase for the demonstration and after the launch of the CCBHC model, state agencies played a critical role in helping clinics meet the certification requirements and overcome implementation challenges. Beyond certifying clinics and setting payment rates, state agencies helped CCBHCs complete cost reports, expand their data collection capacity to report and use quality measures, and learn how to navigate new billing processes. Some states also facilitated learning collaboratives to share best practices and provided CCBHCs with regular feedback on quality measures. CCBHCs appreciated the time to plan for the model and reported that support from their state partners

³² New Jersey submitted cost reports with projected rather than actual costs and were, therefore, excluded from our analysis because their data was not comparable with other states. Nevada did not submit cost reports.

contributed to their success. Future states and clinics undertaking the CCBHC model or similar models would benefit from having adequate time to work through the implementation details before the launch of new services and payment mechanisms, and they could benefit from consultation with CCBHCs and states that were early adopters of the model. They will also need ongoing technical assistance to ensure that the model is implemented with fidelity to the CCBHC criteria. Federal agencies were also instrumental in providing guidance on the PPS models, clarifying questions about the CCBHC criteria, and monitoring the costs of services and quality of care over time.

Maintain flexibility in the certification criteria while ensuring that CCBHCs provide a common standard of care. Although the CCBHC certification criteria provide the general framework for services and staffing and other capabilities of the clinic, states have some flexibility to align the criteria with their existing service delivery system and the populations served by CCBHCs. This type of flexibility enabled states to tailor the CCBHC model to their local context and to make changes over time as they learned from the demonstration. As states and clinics gain more experience with the CCBHC model, there may be opportunities to refine and clarify expectations for certain CCBHC requirements to ensure that CCBHCs maintain a similar capacity to coordinate care and provide a core set of services. For example, CCBHCs had considerable flexibility to define the primary care screening and monitoring requirements, and they varied in the extent to which treatment teams included primary care providers, in their information exchange with external primary care providers, and in their performance on quality measures related to physical health care. The CCBHC criteria also requires training in primary and behavioral health care integration but does not prescribe or recommend any specific training or models for integration. In addition, some CCBHCs struggled to provide intensive community-based mental health services for members of the armed forces and veterans. Some state officials reported that CCBHCs were not located in communities in which many members of the armed forces or veterans sought services from community behavioral health centers, but they also reported that some CCBHCs found it challenging to engage these populations and to develop referral relationships with agencies that specialize in serving them. It was not always clear how CCBHCs and states ensured that members of the armed forces and veterans received services consistent with the mental health guidelines promulgated by the Veterans Health Administration (VHA), as required in the CCBHC criteria. States and CCBHCs may benefit from further guidance on strategies for serving members of the armed forces and veterans in communities where these populations are less prevalent and on how to develop relationships with other facilities and providers that specialize in serving these populations.

Encourage states to use and expand on the mechanisms available to align CCBHC payment rates with costs and incentivize high-quality care. Over the short term, the CCBHC demonstration could increase overall Medicaid costs as clinics expand services. The demonstration was designed to provide additional resources to these clinics to meet the certification requirements and cover the costs of services. The payment mechanisms, particularly the daily PPS-1 model, could provide an incentive for clinics to maximize revenue by having more frequent visits with clients. However, the demonstration allows states to use the cost reports submitted by CCBHCs each year to adjust payment rates for the following year. If a clinic has a high number of daily visits with clients in one year, their rate for the following year could be lower than the previous year because the re-basing process would divide the total costs for the previous year by a larger number of visits. Over time, this re-basing process should align payment rates with costs and ensure that CCBHCs have predictable funding. States are not required, however, to re-base payment rates each year using this process. HHS could encourage states to use the cost reports for re-basing and continue to monitor the extent to which payment rates align with costs over time to assess if other mechanisms are necessary to control costs.

Quality measure reporting also has an important role in the context of the PPS. CCBHC payments are not linked to the provision of individual procedures and the demonstration does not require that CCBHCs track the delivery of specific EBPs. Rather, CCBHCs are paid the same amount regardless of the specific services they provide to a client during the day (or month for PPS-2 states) in which that client receives care. Thus, there could be an incentive for CCBHCs to provide minimal services while still collecting the full daily or monthly payment. However, the quality measures help to guard against this incentive by providing information that states can use to assess whether the quality of care suffers over time. States can also use the quality measures to incentivize the delivery of better care. The demonstration required PPS-2 states to award QBPs based on quality measures whereas this was optional for PPS-1 states. All but one state implemented QBP systems but it's unclear whether the measures used in those systems and the amount of QBPs to CCBHCs incentivized better care. The QBP systems could be strengthened and refined in at least two ways:

1. ***Encourage states to expand the measures used to award QBPs.*** States were required to use a common set of measures to award QBPs and could require CCBHCs to achieve performance goals on additional measures, but few states elected to require many additional measures. In the future, states could consider using a broader set of measures to award QBPs. The measures could reflect various domains of care, including measures of care coordination and physical health care (no state included measures of physical health care in their QBP systems). Some of the measures for which CCBHCs showed the most consistent improvement (such as measures of screening and intervention for tobacco and unhealthy alcohol use) were not among the measures that states used to award QBPs. Flexibility in the selection of measures might enable CCBHCs and states to focus on domains of quality that would align with local or state quality improvement goal. States may also want to prioritize measures for the first year that have good historical data to inform performance targets and phase in other measures over time.
2. ***Use QBP systems to further incentivize care coordination and data sharing.*** Several of the measures that states used to award QBPs assess domains of care for which performance could be influenced by the strength of relationships and data sharing agreements between CCBHCs and other providers. For example, high performance on measures of follow-up care after hospitalization could be influenced by whether the CCBHC has protocols and data sharing agreements in place with hospitals to receive notification when a client in their care is discharged. However, hospitals and other providers do not share in the QBPs or otherwise receive funding as part of the demonstration (unless they are functioning as a DCO providing CCBHC services, which was rare), and therefore they do not have a direct financial incentive or additional resources to invest in partnerships with CCBHCs. In the future, states could design QBP systems that would allow other entities to share in the QBPs, but this would require federal legislative action because it is not currently permitted under the demonstration.

Provide resources and technical assistance to develop data systems that facilitate population health management and care coordination. Enhancing EHRs and other data systems to report quality measures and capture information to coordinate care was a considerable achievement for CCBHCs that was facilitated by the demonstration funding and technical assistance from state agencies. Officials in several states cited EHRs as central facilitators of care coordination, noting, for example, that the integration of treatment plans and physical and behavioral health care records improved communication between providers. Some states and CCBHCs also added population health management functionalities into their EHRs to identify clients who required more intensive follow-up and better care coordination (for example, developing data-driven algorithms based on client risk factors). The sophistication of these data systems, however, still varied somewhat across CCBHCs. For example, some CCBHCs had systems that

captured information about physical health conditions and exchanged information with other providers, whereas others did not. This variation could affect the ability of CCBHCs to monitor health status and coordinate care. Building on their progress, CCBHCs may benefit from additional resources and technical assistance to further develop data systems that support the screening, care coordination, and population health management functions of the CCBHC model. CCBHCs and states may also benefit from technical assistance to develop specific strategies for using data to inform quality improvement activities. Several of the strategies developed by CCBHCs and states could be replicated. For example, some states provided CCBHCs with data on their performance on quality measures relative to other CCBHCs in the state. CCBHCs in some states also used their data systems to provide their staff with aggregate and client-level information on clients' health status, medication adherence, and service use to improve care management and identify clients who required additional care.

Strengthen data to facilitate future monitoring and evaluation. As the CCBHC model matures and expands, future research should build on this evaluation to gain a deeper understanding of the factors that contribute to the successful implementation and to outcomes. Some areas for future inquiry include the strength of CCBHCs' collaborations with external providers, the mechanisms CCBHCs use to share information with external providers, how CCBHCs support the new 988 suicide and crisis hotline, the extent to which CCBHCs address and impact physical health conditions, and if there are any critical gaps in the required CCBHC services. There would also be value in further assessing the impact of the model on the behavioral health care workforce and behavioral health treatment capacity of communities.

Several enhancements to data could support future monitoring and evaluation. Standardized cost reports and quality measures were critical for evaluating the demonstration. However, as noted in this report, some of the quality measure data included anomalies (for example, abnormally low denominators), and not all states submitted performance data for all measures. Periodic auditing of quality measure data could increase its value for assessing changes in the quality of care and making state-to-state comparisons. Many of the measures used in the demonstration are also used in other state and national reporting programs, which release periodic updates to the measure specifications. It will therefore be important to ensure that the specifications for the demonstration measures continue to align with measures reported in other programs to facilitate comparisons and decrease reporting burden for CCBHCs and states. In addition, most of the quality measures assessed processes of care (such as screening and follow up after discharge from a hospital) and experiences with care; only one assessed improvement in outcomes (depression remission). Measures that assess changes in mental health symptoms, substance use, functioning, or physical health status would be valuable to assess the impacts of the CCBHC model and identify areas of quality improvement. These outcomes would likely be captured through structured fields in EHRs and/or surveys of clients--both of which would require an investment of resources to collect high-quality data--and completely standardizing data collection across clinics might not be possible. Finally, states submitted quality measure data about nine months after the end of each demonstration year, making it difficult to assess the immediate implementation factors that could affect performance.

More complete Medicaid data would also facilitate future monitoring and evaluation of the demonstration. Complete cost information for services provided through managed care arrangements would allow for an assessment of the impact of the demonstration on costs beyond Oklahoma. This is not a limitation unique to behavioral health services or this demonstration; rather, it is a function of the level of detail that states require managed care entities to submit with their encounter data. However, states are beginning to collect more complete data on managed care payments to providers as part of their T-MSIS

reporting to CMS. T-MSIS data could be useful for future evaluations of the CCBHC model, but it was not available at the start of this evaluation.

CCBHC claims also did not consistently provide information on the procedures or services provided during a visit (or month for PPS-2 states) because not every state required CCBHCs to provide this information with the claim to get paid. In the PPS-2 states, CCBHCs were only required to submit one claim per month for a beneficiary seen in that month, and there was no requirement to submit additional data on the number of visits during the month. There also was no way to identify DCO services provided under the CCBHC payment. These issues limit the ability to use claims data for more detailed analyses focused on the delivery of specific services, including EBPs. However, requiring such detail on claims would eliminate the simplicity of submitting a daily or monthly claim--an appealing feature of the payment model that clinics and states reported allowed CCBHCs more flexibility to provide services without concern for specific procedure codes. States could offer some type of incentive for CCBHCs to submit claims with more details on procedures, but such an incentive would need to, at a minimum, offset the time required for more detailed coding and tracking of specific services. Other data sources, such as the quality measures or surveys described above, could provide information about the delivery of specific EBPs.

C. Conclusions

The CCBHC demonstration provided a unique opportunity to test the delivery of a set of comprehensive services in community behavioral health clinics using a PPS that, in many states, incorporated QBP. Clinics expanded services, hired and trained staff, developed partnerships with external providers, enhanced their data systems, and changed many of their care processes to become CCBHCs. Overall, the quality of care provided to clients of CCBHC services was comparable to available benchmarks, and, for some measures, improved substantially over time. State agencies played a critical role in supporting the demonstration. States experienced some initial challenges setting the prospective payment rates for CCBHCs, but over time these rates came into greater alignment with costs in all but one state. The introduction of the CCBHC model impacted service use differently across states, which likely reflects differences in implementation strategies and populations. There was some evidence of decreasing hospitalizations and ED visits in some states. As the CCBHC model matures and expands, continued monitoring and evaluation will be important to identify areas for quality improvement. CCBHCs would benefit from ongoing technical assistance to help them adhere to the certification requirements and overcome implementation challenges. New areas of evaluation--such as effects of the model on workforce shortages, burnout, job satisfaction, and retention, and the financial health of community-based behavioral health organizations--may reveal important additional benefits of the model for access, availability, and quality of behavioral health care.

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APPENDIX A:
IMPLEMENTATION FINDINGS

Table A.1. Age and Gender of Clients Receiving Services from CCBHC, DY1

	Denominator	Child/adolescent (ages 0–17)			Adult (ages 18+)			Female			Male		
		Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.
Total	309,322	23%	0%	58%	77%	42%	100%	52%	35%	61%	48%	39%	65%
MN	23,027	27%	2%	58%	73%	42%	98%	51%	47%	54%	49%	46%	53%
MO	121,787	24%	10%	28%	76%	72%	90%	53%	44%	59%	47%	41%	56%
NJ	17,851	19%	<1%	38%	81%	62%	99%	56%	53%	61%	44%	39%	47%
NV	4,324	8%	7%	8%	92%	92%	93%	42%	42%	50%	57%	50%	58%
NY	49,903	22%	0%	47%	78%	53%	100%	48%	37%	55%	52%	45%	63%
OK	20,610	25%	12%	31%	75%	69%	88%	52%	50%	54%	48%	46%	50%
OR	52,911	24%	5%	40%	76%	60%	95%	52%	47%	55%	48%	44%	52%
PA	18,909	20%	9%	36%	80%	64%	91%	50%	35%	58%	50%	42%	65%

Source: DY1 Quality Measure Reports.

Avg. = average percentage across CCBHCs; Min. = lowest percentage for a CCBHC; Max. = highest percentage for a CCBHC.

Table A.2. Ethnicity of Clients Receiving Services from CCBHC, DY1

	Denominator	Hispanic or Latino			Not Hispanic or Latino			Unknown		
		Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.
Total	309,322	11%	1%	92%	74%	1%	99%	15%	0%	84%
MN	23,027	5%	1%	11%	64%	15%	92%	30%	1%	84%
MO	121,787	5%	1%	75%	75%	1%	99%	19%	0%	47%
NJ	17,851	17%	6%	35%	67%	36%	88%	16%	0%	46%
NV	4,324	32%	5%	33%	60%	58%	87%	8%	8%	9%
NY	49,903	17%	2%	69%	78%	25%	95%	4%	0%	9%
OK	20,610	41%	7%	92%	57%	3%	93%	2%	0%	5%
OR	52,911	8%	2%	21%	76%	43%	96%	16%	0%	48%
PA	18,909	9%	1%	39%	84%	34%	99%	6%	0%	64%

Source: DY1 Quality Measure Reports.

Avg. = average percentage across CCBHCs; Min. = lowest percentage for a CCBHC; Max. = highest percentage for a CCBHC.

Table A.3. Race of Clients Receiving Services from CCBHC, DY1

	Denominator	White			Black or African American			American Indian/ Alaskan Native			Asian			Native Hawaiian/ Pacific Islander			More than one race			Unknown		
		Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.
Total	309,322	71%	4%	99%	12%	<1%	69%	2%	0%	<1%	1%	0%	41%	<1%	0%	1%	5%	0%	59%	9%	0%	59%
MN	23,027	69%	26%	89%	12%	1%	30%	2%	<1%	6%	4%	<1%	41%	<1%	0%	<1%	5%	4%	7%	8%	2%	13%
MO	121,787	80%	20%	94%	10%	1%	69%	1%	<1%	1%	<1%	0%	1%	<1%	0%	1%	2%	<1%	38%	6%	0%	28%
NJ	17,851	55%	20%	83%	15%	5%	37%	<1%	0%	<1%	3%	<1%	7%	<1%	0%	1%	6%	6%	39%	19%	6%	39%
NV	4,324	45%	44%	64%	21%	1%	22%	1%	0%	4%	2%	0%	2%	1%	0%	1%	25%	6%	26%	5%	5%	5%
NY	49,903	62%	4%	94%	21%	2%	66%	1%	0%	2%	1%	0%	5%	<1%	0%	1%	9%	0%	37%	6%	0%	37%
OK	20,610	72%	69%	74%	13%	2%	23%	8%	7%	10%	1%	<1%	1%	<1%	0%	0%	5%	0%	2%	1%	0%	2%
OR	52,911	71%	39%	90%	3%	1%	11%	2%	<1%	7%	1%	0%	2%	<1%	0%	1%	6%	2%	53%	16%	2%	53%
PA	18,909	66%	16%	99%	22%	<1%	64%	<1%	0%	<1%	<1%	<1%	1%	<1%	0%	0%	2%	0%	59%	9%	0%	59%

Source: DY1 Quality Measure Reports.

Avg. = average percentage across CCBHCs; Min. = lowest percentage for a CCBHC; Max. = highest percentage for a CCBHC.

Table A.4. Insurance Status of Clients Receiving Services from CCBHC, DY1

	Denominator	Medicaid			CHIP			Medicare			Dually eligible			VHA/TRICARE			Commercially insured			Uninsured			Other		
		Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.
Total	309,322	53%	23%	99%	2%	0%	24%	4%	0%	16%	8%	0%	23%	1%	0%	2%	16%	0%	38%	14%	0%	49%	2%	0%	43%
MN	23,027	53%	28%	74%	0%	0%	0%	6%	1%	10%	5%	0%	19%	<1%	0%	1%	20%	9%	26%	5%	0%	18%	11%	0%	43%
MO	121,787	46%	23%	94%	1%	0%	24%	4%	0%	16%	10%	2%	23%	1%	0%	2%	17%	0%	36%	18%	1%	49%	2%	0%	28%
NJ	17,851	52%	39%	79%	1%	0%	4%	9%	0%	13%	7%	0%	17%	<1%	0%	1%	23%	1%	37%	5%	0%	8%	2%	0%	12%
NV	4,324	66%	64%	99%	0%	0%	0%	<1%	0%	0%	1%	0%	1%	<1%	0%	0%	6%	6%	9%	17%	0%	18%	9%	0%	10%
NY	49,903	62%	40%	92%	1%	0%	13%	4%	0%	12%	7%	3%	16%	<1%	0%	1%	19%	1%	31%	4%	0%	12%	2%	0%	5%
OK	20,610	41%	36%	44%	0%	0%	0%	4%	3%	5%	9%	9%	9%	<1%	0%	1%	9%	6%	13%	36%	32%	47%	1%	0%	2%
OR	52,911	62%	28%	84%	4%	0%	9%	3%	0%	9%	4%	1%	15%	1%	0%	1%	9%	2%	26%	14%	0%	27%	3%	0%	17%
PA	18,909	61%	43%	83%	<1%	0%	0%	5%	0%	7%	12%	0%	21%	<1%	0%	1%	15%	2%	38%	3%	0%	6%	5%	0%	23%

Source: DY1 Quality Measure Reports.

Avg. = average percentage across CCBHCs; Min. = lowest percentage for a CCBHC; Max. = highest percentage for a CCBHC.

Table A.5. Housing Status of Clients Receiving Services from CCBHC, DY1

	Denominator	Private residence			Foster home			Residential or institutional treatment			Jail (correctional facility)			Homeless			Other			Not available		
		Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.
Total	231,862	67%	29%	97%	1%	0%	5%	3%	0%	34%	1%	0%	7%	3%	0%	13%	4%	0%	16%	21%	0%	69%
MN	35,803	48%	29%	72%	1%	1%	3%	1%	0%	4%	>1%	0%	1%	3%	0%	10%	3%	0%	4%	44%	19%	69%
MO	53,119	64%	39%	82%	1%	0%	3%	3%	1%	7%	>1%	0%	2%	3%	0%	10%	7%	1%	11%	21%	2%	46%
NJ	13,868	93%	81%	97%	0%	0%	0%	2%	0%	6%	0%	0%	0%	2%	0%	9%	1%	0%	4%	2%	0%	16%
NV	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
NY	49,903	81%	56%	94%	>1%	0%	2%	4%	0%	34%	>1%	0%	3%	3%	0%	12%	3%	0%	7%	7%	0%	20%
OK	16,085	79%	61%	87%	2%	1%	3%	2%	0%	4%	1%	0%	1%	5%	2%	13%	8%	3%	16%	4%	1%	9%
OR	43,284	55%	30%	75%	3%	1%	5%	5%	1%	7%	1%	0%	1%	5%	2%	10%	3%	1%	10%	28%	7%	63%
PA	19,800	67%	41%	95%	>1%	0%	1%	5%	1%	9%	1%	0%	7%	1%	0%	4%	1%	0%	3%	24%	0%	53%

Source: DY1 Quality Measure Reports.

Notes: Housing status among clients was collected during DY1; the earliest measurement period date was January 1, 2017, and the latest measurement period date was June 30, 2018. Data in the reporting form do not specify exactly when collection occurred. Nevada did not submit data at the time of this report.

Avg. = average percentage across CCBHCs; Min. = lowest percentage for a CCBHC; Max. = highest percentage for a CCBH.

Table A.6. Number and Proportion of CCBHCs that have Formal and Informal Relationships with Other Facilities and Providers in DY1 and DY2

Facility/provider type ^a	DCO, March 2018		DCO, March 2019		Formal (non-DCO), March 2018		Formal (non-DCO), March 2019		Informal, March 2018		Informal, March 2019	
	N	%	N	%	N	%	N	%	N	%	N	%
FQHCs	2	3	5	8	40	60	39	59	19	28	17	26
Rural health clinics	0	0	0	0	21	31	21	32	12	18	13	20
Primary care providers	2	3	3	5	48	72	41	62	25	37	27	41
Inpatient psychiatric facilities	1	1	0	0	52	78	45	68	19	28	26	39
Psychiatric residential treatment facilities	1	1	0	0	40	60	35	53	28	42	30	45
SUD residential treatment facilities	3	4	3	5	43	64	40	61	28	42	24	36
Medical detoxification facilities	2	3	2	3	42	63	34	52	23	34	28	42
Ambulatory detoxification facilities	1	1	2	3	32	48	30	45	26	39	27	41
Post-detoxification step-down facilities	0	0	3	5	31	46	28	42	24	36	27	41
Residential (non-hospital) crisis settings	3	4	2	3	35	52	31	47	24	36	21	32
MAT providers for substance use	2	3	6	9	43	64	35	53	20	30	25	38
Schools	0	0	2	3	51	76	52	79	19	28	12	18
School-based health centers	0	0	1	2	21	31	28	42	20	30	12	18
Child welfare agencies	0	0	0	0	43	64	36	55	26	39	31	47
Therapeutic foster care service agencies	0	0	0	0	31	46	26	39	31	46	31	47
Juvenile justice agencies	0	0	0	0	38	57	34	52	26	39	29	44
Adult criminal justice agencies/courts	0	0	2	3	51	76	45	68	19	28	19	29
Mental health/drug courts	0	0	2	3	52	78	50	76	15	22	16	24
Law enforcement	0	0	0	0	36	54	35	53	32	48	31	47
Indian Health Service or other tribal programs	0	0	0	0	10	15	11	17	18	27	13	20
Indian Health Service youth regional treatment centers	0	0	0	0	4	6	4	6	13	19	10	15
Homeless shelters	0	0	1	2	28	42	29	44	33	49	31	47
Housing agencies	0	0	1	2	40	60	40	61	30	45	25	38
Suicide/crisis hotlines and warmlines	19	28	20	30	38	57	30	45	15	22	16	24
Employment services and/or supported employment	2	3	5	8	35	52	34	52	29	43	24	36
Older adult services	0	0	1	2	27	40	26	39	30	45	33	50
Other social and human service providers	2	3	4	6	38	57	34	52	35	52	31	47
Consumer-operated/peer service provider organizations	3	4	4	6	26	39	29	44	31	46	28	42
U.S. Department of Veterans Affairs treatment facilities	0	0	1	2	37	55	33	50	32	48	26	39
Urgent care centers	0	0	1	2	21	31	27	41	29	43	24	36
EDs	2	3	4	6	45	67	48	73	26	39	20	30
Hospital outpatient clinics	0	0	0	0	29	43	28	42	37	55	34	52
Total CCBHCs	67	100	66	100	67	100	66	100	67	100	66	100

Source: CCBHC Annual Progress Report Demonstration Year 1 and Year 2 data collected by Mathematica and the RAND Corporation, March 2018 and March 2019.

Notes: Columns are not mutually exclusive.

a. Thick borders approximately signify the 5 main care coordination groupings from the CCBHC certification criteria: (1) FQHCs, rural health clinics, other primary care providers; (2) inpatient and residential behavioral health treatment; (3) community or regional services, supports, and providers; (4) U.S. Department of Veterans Affairs facilities; and (5) inpatient acute care hospitals. For more information about the grouping of providers/facilities, see the criteria at https://www.samhsa.gov/sites/default/files/programs_campaigns/ccbhc-criteria.pdf, pp. 27-31.

APPENDIX B:

QUALITY OF CARE AND QUALITY BONUS PAYMENTS

Table B.1. Required CCBHC and State-Reported Quality Measures

Quality measure domains	Reported measures	Clinic-reported or state-reported measures	Potential data source(s)	Measure steward ^b
Access to care/ timeliness of initial evaluation	Time to Initial Evaluation (I-EVAL)	Clinic-reported	EHR, electronic scheduler	SAMHSA
Depression screening and treatment	Child and Adolescent Major Depressive Disorder: SRA (SRA-BH-C)	Clinic-reported	EHR, client records	AMA-PCPI
	Adult Major Depressive Disorder: SRA (SRA-A)	Clinic-reported	EHR, client records	AMA-PCPI
	Screening for Clinical Depression and Follow-up Plan (CDF-BH)	Clinic-reported	EHR, client records	CMS
	Depression Remission at 12 Months (DEP-REM-12)	Clinic-reported	EHR, client records, client follow-up with standard measure (PHQ-9)	MNCM
Psychiatric medication management and adherence	Adherence to Antipsychotic Medications for Individuals with Schizophrenia (SAA-BH)	State-reported	Claims data/encounter data	CMS
	Antidepressant Medication Management (AMM-BH)	State-reported	Claims data/encounter data	NCQA
Follow-up and medication management for children with ADHD	Follow-up Care for Children Prescribed ADHD Medication (ADD-BH)	State-reported	Claims data/encounter data	NCQA
Physical health care - weight and metabolic health screening	Adult BMI Screening and Follow-up Plan (BMI-SF)	Clinic-reported	EHR, client records	CMS
	Weight Assessment for Nutrition and Physical Activity for Children/Adolescents (WCC-BH)	Clinic-reported	EHR, encounter data	NCQA
	Diabetes Screening for People with Schizophrenia or Bipolar Disorder who are Using Antipsychotic Medications (SSD)	State-reported	Claims data/encounter data	NCQA
Substance use screening and treatment	Tobacco Use - Screening and Cessation Intervention (TSC)	Clinic-reported	EHR, encounter data	AMA-PCPI
	Unhealthy Alcohol Use - Screening and Brief Counseling (ASC)	Clinic-reported	EHR, client records	AMA-PCPI
	Initiation and Engagement of AOD Dependence Treatment (IET-BH)	State-reported	EHR, client records	NCQA

Table B.1. (continued)

Quality measure domains	Reported measures	Clinic-reported or state-reported measures	Potential data source(s)	Measure steward ^b
ED and hospital transitions	Follow-up After ED Visit for Mental Illness (FUM)	State-reported	Claims data/encounter data	NCQA
	Follow-up after ED Visit for AOD Dependence (FUA)	State-reported	Claims data/encounter data	NCQA
	Follow-up After Hospitalization for Mental Illness, ages 21+ (FUH-BH-A)	State-reported	Claims data/encounter data	NCQA
	Follow-up after Hospitalization for Mental Illness, ages 6-21 (FUH-BH-C)	State-reported	EHR, client records, client follow-up with standard measure (PHQ-9)	NCQA
	Plan All-Cause Readmission Rate (PCR-BH)	State-reported	Claims data/encounter data	NCQA
Client and family experience of care	Patient (adult) Experience of Care Survey (PEC)	State-reported	MHSIP survey	SAMHSA
	Youth/Family Experience of Care Survey (Y/FEC)	State-reported	MHSIP survey	SAMHSA
Housing ^a	Housing Status (residential status during the reporting period) (HOU)	State-reported	URS	SAMHSA

Source: SAMHSA. "The Metrics and Quality Measures for Behavioral Health Clinics Technical Specifications and Resource Manuals." Rockville, MD: SAMHSA, 2016. Available at <https://www.samhsa.gov/section-223/quality-measures>.

- a. The Housing Status measure contained an error in the reporting form and only provided space for 1 set of numbers; thus, states were unable to report housing status at 2 time-points as intended in the technical specification. Five states reported housing status at 1 time-point during the entire reporting period; 1 state reported the combined total of housing status collected at 2 time-points during the reporting period; 1 state edited the form and reported housing status separately at 2 time-points; and 1 state did not complete this measure.
- b. Measure Steward is the organization that is responsible for maintaining documentation on the justification, evidence, specifications, use, and results of the measure.

Table B.2. Quality Measure Specifications

Measure	Numerator specification	Denominator specification
Time to Initial Evaluation (I-EVAL)	<p>Metric 1. The number of consumers in the eligible population who received an initial evaluation within 10 business days of the first contact with the provider entity during the measurement year.</p> <p>Metric 2. The total number of days between first contact and initial evaluation for all members of the eligible population seen at the provider entity during the measurement year.</p>	<p>Metric 1. The number of new consumers who contacted the provider entity seeking services during the measurement year.</p> <p>Metric 2. The number of new consumers who contacted the provider entity seeking services during the measurement year.</p>
Screening for Clinical Depression and Follow-up Plan (CDF-BH)	The number of consumers who were screened for clinical depression using a standardized tool AND, if positive, a follow-up plan is documented on the date of the positive screen using one of the codes in source measure.	The number of consumers with an outpatient visit during the measurement year with an eligible encounter code.
Depression Remission at 12 Months (DEP-REM-12)	The number of consumers in the eligible population who achieved remission with a PHQ-9 result less than 5, 12 months (± 30 days) after an index visit.	The number of consumers seen at the provider entity at least once during the measurement year who have a diagnosis of Major Depression or Dysthymia during an outpatient encounter during the measurement year, AND who have an index date PHQ-9 score greater than 9 documented during the 12-month identification period.
Child and Adolescent Major Depressive Disorder: SRA (SRA-BH-C)	The number of consumer visits with an assessment for suicide risk.	All consumer visits for those consumers 6-17 years of age with a diagnosis of Major Depressive Disorder.
Adult Major Depressive Disorder: SRA (SRA-A)	The number of consumer visits with a SRA completed during the visit in which a new diagnosis or recurrent episode was identified.	All consumer visits for those consumers aged 18 years and older with a diagnosis of Major Depressive Disorder.
Adherence to Antipsychotic Medications for Individuals with Schizophrenia (SAA-BH)	The number of consumers who achieved a proportion of days covered of at least 80% for their antipsychotic medications during the measurement year.	The number of consumers age 19-64 seen at the provider entity at least once during the measurement year with schizophrenia, excluding those diagnosed with dementia or do not have antipsychotic medications.
Antidepressant Medication Management (AMM-BH)	<p>Acute Phase: The number of clients with at least 84 days (12 weeks) of continuous treatment with antidepressant medication.</p> <p>Continuation Phase: The number of consumers with at least 180 days (6 months) of continuous treatment with antidepressant medication.</p>	The number of consumers age 18+ seen at the provider entity at least once during the measurement year who were treated with antidepressant medication and had a diagnosis of Major Depression.
Follow-up Care for Children Prescribed ADHD Medication (ADD-BH)	<p>Initiation Phase: An outpatient, intensive outpatient, or partial hospitalization follow-up visit with a practitioner with prescribing authority, within 30 days after the IPSP.</p> <p>Continuation Phase: Numerator compliant for Rate 1 Initiation Phase, and at least 2 follow-up visits with any practitioner, 31-300 days (9 months) after the IPSP.</p>	The number of consumers age 6-12 newly prescribed ADHD medication during the 12-month Intake Period. Children must be continuously enrolled for 120 days (4 months) prior to the IPSP through 30 days (1 month) after the IPSP.
Adult BMI Screening and Follow-Up Plan (BMI-SF)	The number of consumers in the eligible population with a documented BMI during the encounter or during the previous 6 months AND, when the BMI is outside of normal parameters, a follow-up plan is documented during the encounter or during the previous 6 months of the current encounter.	The number of consumers age 18+ seen at the provider entity at least once during the measurement year with an eligible encounter code, excluding consumers who receive palliative care, pregnant, refuse measurement, urgent medical situation, or other reason documented that measurement is inappropriate.

Table B.2. (continued)

Measure	Numerator specification	Denominator specification
Weight Assessment for Nutrition and Physical Activity for Children/Adolescents (WCC)	The number of consumers age 3-17 with a BMI percentile documented during the measurement year.	The number of consumers age 3-17 seen at the provider entity at least once during the measurement year who had an outpatient visit with a PCP or OB/GYN practitioner during the measurement year, excluding consumers who are pregnant.
Diabetes Screening for People with Schizophrenia or Bipolar Disorder Who Are Using Antipsychotic Medications (SSD)	The number of consumers who had one or more diabetes screenings (a glucose test or an HbA1c) performed during the measurement year, as identified by claim/encounter or automated laboratory data.	The number of consumers age 18-64 with schizophrenia or bipolar disorder, who were dispensed an antipsychotic medication and had a diabetes screening test during the measurement year, excluding consumers with diabetes already identified.
Tobacco Use - Screening and Cessation Intervention (TSC)	The number of clients who were screened for tobacco use at least once within 24 months AND who received tobacco cessation intervention if identified as a tobacco user.	The number of clients age 18+ seen at the provider entity at least once during the measurement year with an eligible encounter code.
Unhealthy Alcohol Use - Screening and Brief Counseling (ASC)	The number of clients who were screened at least once within the last 24 months for unhealthy alcohol use using a systematic screening method AND who received brief counseling if identified as an unhealthy alcohol user.	The number of clients age 18+ seen at the provider entity at least once during the measurement year with an eligible encounter code or had 1 preventive care visit.
Initiation and Engagement of AOD Dependence Treatment (IET-BH)	Initiation Phase: The number of consumers who received treatment initiation through an inpatient AOD admission, outpatient visit, intensive outpatient encounter, or partial hospitalization within 14 days of the diagnosis. Engagement Phase: The number of consumers received treatment initiation through an inpatient AOD admission, outpatient visit, intensive outpatient encounter, or partial hospitalization within 14 days of the diagnosis, AND had 2 or more additional services with a diagnosis of AOD within 30 days of the initiation visit.	The number of consumers with a new episode of AOD during the Intake period. States report separate rates for 3 age groups: 13-17, 18-64, and 65 and older.
Follow-up after ED Visit for Mental Illness (FUM)	30-day: An outpatient visit, intensive outpatient encounter or partial hospitalization, with any practitioner, with a primary diagnosis of a mental health disorder within 30 days after the ED visit.	The number of ED visits by consumers seen at the provider entity during the measurement year who had an ED visit with a primary diagnosis of mental illness on or between the first day of the measurement year and the last day of the measurement year (less 30 days).
Follow-Up After ED for AOD Dependence: (FUA)	30-day: An outpatient visit, intensive outpatient encounter or partial hospitalization, with any practitioner, with a primary diagnosis of AOD within 30 days after the ED visit.	The number of ED visits by consumers seen at the provider entity during the measurement year who had an ED visit with a primary diagnosis of AOD on or between the first day of the measurement year and the last day of the measurement year (less 30 days).
Follow-up After Hospitalization for Mental Illness, adult (FUH-BH-A)	30-day: An outpatient visit, intensive outpatient visit, or partial hospitalization with a mental health practitioner within 30 days after discharge.	The number of eligible discharges for consumers age 21+ who were hospitalized for treatment of selected mental illness diagnoses and who had an outpatient visit, an intensive outpatient encounter, or partial hospitalization with a mental health practitioner.
Follow-up After Hospitalization for Mental Illness, child/adolescent (FUH-BH-C)	30-day: An outpatient visit, intensive outpatient visit, or partial hospitalization with a mental health practitioner within 30 days after discharge.	The number of eligible discharges for consumers age 6-21 who were hospitalized for treatment of selected mental illness diagnoses and who had an outpatient visit, an intensive outpatient encounter, or partial hospitalization with a mental health practitioner.

Table B.2. (continued)

Measure	Numerator specification	Denominator specification
Plan All-Cause Readmission (PCR-BH)	At least 1 acute readmission for any diagnosis within 30 days of the Index Discharge Date.	The number of eligible discharges.
Patient Experience of Care Survey (PEC)	The number of consumers who selected positive answer options on the survey.	The number of consumers who responded to the survey.
Youth/Family Experience of Care Survey (Y/FEC)	The number of family members who selected positive answer options on the survey.	The number of family members who responded to the survey.
Housing Status (HOU)	The number of consumers in each living situation based on their most recent assessment or on the most recent available information on record during the measurement period.	The number of consumers seen in the measurement year.

Source: SAMHSA. "The Metrics and Quality Measures for Behavioral Health Clinics Technical Specifications and Resource Manuals." Rockville, MD: SAMHSA, 2016. Available at <https://www.samhsa.gov/section-223/quality-measures>.

Table B.3. CCBHCs Excluded from Quality Measure Analysis

Measures	Reason for exclusion
Time to Initial Evaluation (I-EVAL)	1 Minnesota clinic and 1 Pennsylvania clinic due to deviation from specification look-back period in DY1
Adult BMI Screening and Follow-up (BMI-SF)	1 Pennsylvania clinic due to deviation from specification look-back period in DY1
Weight Assessment and Counseling for Nutrition and Physical Activity for Children/adolescents (WCC-BH)	1 Pennsylvania clinic due to deviation from specification look-back period in DY1
Screening for Clinical Depression and Follow-up Plan (CDF-BH)	1 Oregon clinic due to deviation from specification in required data collection in DY1 and DY2
Follow-up Care for Children Prescribed ADHD Medication (ADD-BH)	All 12 Oregon clinics due to deviation from specification in denominator calculation in DY2
Initiation and Engagement of AOD Dependence Treatment (IET-BH)	1 New Jersey clinic due to deviation from specification in denominator calculation in DY2
Depression Screening, Follow-Up, and Remission, (DEP-REM-12)	All 7 New Jersey clinics due to combined state denominator <30 in DY1
Follow-up Care for Children Prescribed ADHD Medication (ADD-BH)	All 7 New Jersey clinics due to combined state denominator <30 in DY2
Initiation and Engagement of AOD Dependence Treatment (IET-BH)	All 3 Oklahoma clinics due to combined state denominator <30 in DY2
Follow-up After ED Visit for Mental Health (FUM)	All 7 Pennsylvania clinics due to combined state denominator <30 in DY2

Table B.4. Time to Initial Evaluation Adult Ages 18+ (I-EVAL)

	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 % within 10 days	DY2 % within 10 days	Change from DY1 to DY2	DY1 average # days	DY2 average # days	Change from DY1 to DY2
Aggregate	96,397	105,013	8,616	69%	73%	4%	9.0	5.4	-3.5
MN	10,709	8,068	-2,641	39%	44%	5%	20.6	9.5	-11.1
MO	31,177	36,382	5,205	70%	77%	7%	10.1	3.2	-6.9
NJ	10,715	8,305	-2,410	81%	84%	3%	7.5	8.2	0.7
NY	16,922	19,930	3,008	82%	82%	1%	5.9	5.6	-0.3
OK	10,684	10,296	-388	71%	81%	10%	5.0	4.7	-0.3
OR	11,793	15,989	4,196	66%	58%	-8%	8.0	12.3	4.3
PA	4,397	6,043	1,646	70%	84%	15%	4.9	4.3	-0.6

Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Excludes 1 clinic in Minnesota and 1 clinic in Pennsylvania across years. Nevada did not submit data in DY2. Lower average number of days is better; negative change in days is improvement.

Table B.5. Time to Initial Evaluation Child/Adolescent Ages 12-17 (I-EVAL)

	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 % within 10 days	DY2 % within 10 days	Change from DY1 to DY2	DY1 average # days	DY2 average # days	Change from DY1 to DY2
Aggregate	18,084	18,781	697	68%	74%	6%	9.7	5.3	-4.4
MN	1,401	1,026	-375	59%	62%	3%	10.1	6.7	-3.4
MO	6,830	7,669	839	69%	77%	7%	11.0	3.5	-7.5
NJ	1,702	1,502	-200	68%	80%	12%	11.0	8.1	-2.9
NY	3,236	3,020	-216	71%	75%	4%	9.2	6.5	-2.7
OK	1,787	1,981	194	65%	73%	7%	7.9	6.6	-1.3
OR	2,660	2,744	84	67%	66%	-1%	7.8	9.5	1.8
PA	468	839	371	62%	85%	23%	7.5	6.1	-1.5

Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Excludes 1 clinic in Minnesota and 1 clinic in Pennsylvania across years. Nevada did not submit data in DY2. Lower average number of days is better; negative change in days is improvement.

Table B.6. Screening for Clinical Depression and Follow-up Plan (CDF-BH)

	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 performance	DY2 performance	Change in performance DY1 to DY2
Aggregate	105,476	122,599	17,123	51%	65%	14%
MN	12,602	11,269	-1,333	24%	53%	29%
MO	21,349	29,058	7,709	49%	61%	12%
NJ	5,625	7,043	1,418	47%	82%	36%
NY	25,826	30,452	4,626	58%	80%	21%
OK	11,295	12,003	708	79%	85%	6%
OR	20,313	24,375	4,062	51%	49%	-2%
PA	8,466	8,399	-67	35%	45%	9%

Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: CDF-BH measures depression screening and documentation of follow-up plan among adults and children/adolescents.

The measure does not capture different rates for adults versus children/adolescents. CDF-BH excludes one Oregon clinic.

Nevada did not submit data in DY2.

Table B.7. Child and Adolescent Major Depressive Disorder: SRA (SRA-BH-C)

	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 performance	DY2 performance	Change in performance DY1 to DY2
Aggregate	56,864	67,771	10,907	53%	73%	20%
MN	8,537	11,450	2,913	18%	36%	18%
MO	14,495	14,472	-23	75%	90%	15%
NJ	4,394	3,526	-868	82%	73%	-9%
NY	14,463	22,121	7,658	61%	84%	23%
OK	911	1,476	565	50%	66%	16%
OR	7,975	10,477	2,502	33%	65%	32%
PA	6,089	4,249	-1,840	36%	85%	49%

Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Nevada did not submit data in DY2.

Table B.8. Adult Major Depressive Disorder: SRA (SRA-A)

	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 performance	DY2 performance	Change in performance DY1 to DY2
Aggregate	141,890	175,729	33,839	60%	71%	11%
MN	22,529	21,597	-932	48%	59%	11%
MO	42,864	65,963	23,099	78%	88%	10%
NJ	19,419	23,115	3,696	35%	30%	-4%
NY	7,271	8,626	1,355	86%	89%	3%
OK	5,534	6,649	1,115	64%	76%	12%
OR	26,009	32,298	6,289	45%	60%	15%
PA	18,264	17,481	-783	66%	81%	16%

Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Nevada did not submit data in DY2.

Table B.9. Depression Remission at 12 Months (DEP-REM-12)

	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 performance	DY2 performance	Change in performance DY1 to DY2
Aggregate	15,974	25,673	9,699	8%	6%	-2%
MN	1,103	2,843	1,740	14%	8%	-6%
MO	3,841	8,887	5,046	7%	5%	-2%
NY	3,579	3,344	-235	10%	18%	7%
OK	1,330	3,430	2,100	2%	3%	1%
OR	5,360	6,343	983	8%	2%	-6%
PA	761	826	65	6%	7%	1%

Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: The measure does not capture different rates for adults versus children/adolescents. New Jersey excluded due to combined state denominator <30 in DY1. Nevada did not submit data in DY2.

Table B.10. Adherence to Antipsychotic Medications for Individuals with Schizophrenia (SAA-BH)

	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 performance	DY2 performance	Change in performance DY1 to DY2	DY1 benchmark	DY2 benchmark
Aggregate	10,973	11,163	190	58%	56%	-2%	59%	61%
MN	735	688	-47	60%	54%	-6%	n/a	n/a
MO	4,477	4,384	-93	67%	66%	-1%	65%	65%
NJ	123	44	-79	49%	41%	-8%	n/a	n/a
NY	1,930	2,071	141	52%	54%	1%	63%	64%
OK	538	889	351	33%	28%	-4%	n/a	n/a
OR	1,570	1,715	145	61%	52%	-8%	n/a	n/a
PA	1,600	1,372	-228	46%	51%	5%	69%	78%

Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Nevada did not submit data in DY2. Benchmarks from the Annual Reporting on the Quality of Care for Adults in Medicaid (FFY 2018 for DY1 and FFY 2019 for DY2), available at <https://www.medicaid.gov/medicaid/quality-of-care/performance-measurement/adult-and-child-health-care-quality-measures/adult-core-set/index.html>.

Table B.11. AMM: Acute Phase (AMM-BH Acute)

	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 performance	DY2 performance	Change in performance DY1 to DY2	DY1 benchmark	DY2 benchmark
Aggregate	10,990	11,539	549	52%	52%	0%	50%	51%
MN	1,095	1,061	-34	47%	50%	3%	53%	52%
MO	3,470	3,389	-81	48%	49%	1%	44%	45%
NJ	1,430	1,254	-176	69%	66%	-2%	n/a	n/a
NY	2,643	3,071	428	55%	54%	-1%	52%	52%
OK	446	935	489	44%	40%	-5%	n/a	48%
OR	942	943	1	49%	48%	-1%	n/a	n/a
PA	964	886	-78	47%	53%	6%	51%	50%

Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Nevada did not submit data in DY2. Benchmarks from the Annual Reporting on the Quality of Care for Adults in Medicaid (FFY 2018 for DY1 and FFY 2019 for DY2), available at <https://www.medicaid.gov/medicaid/quality-of-care/performance-measurement/adult-and-child-health-care-quality-measures/adult-core-set/index.html>.

Table B.12. AMM: Continuation Phase (AMM-BH-cont.)

	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 performance	DY2 performance	Change in performance DY1 to DY2	DY1 benchmark	DY2 benchmark
Aggregate	10,990	11,539	549	37%	38%	1%	34%	34%
MN	1,095	1,061	-34	28%	29%	1%	39%	39%
MO	3,470	3,389	-81	35%	34%	-1%	27%	27%
NJ	1,430	1,254	-176	50%	51%	0%	n/a	n/a
NY	2,643	3,071	428	41%	42%	0%	38%	38%
OK	446	935	489	41%	43%	2%	n/a	30%
OR	942	943	1	30%	30%	0%	n/a	n/a
PA	964	886	-78	27%	33%	6%	37%	35%

Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Nevada did not submit data in DY2. Benchmarks from the Annual Reporting on the Quality of Care for Adults in Medicaid (FFY 2018 for DY1 and FFY 2019 for DY2), available at <https://www.medicaid.gov/medicaid/quality-of-care/performance-measurement/adult-and-child-health-care-quality-measures/adult-core-set/index.html>.

Table B.13. Follow-up Care for Children Prescribed ADHD Medication: Initiation Phase (ADD-BH-int.)

	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 performance	DY2 performance	Change in performance DY1 to DY2	DY1 benchmark	DY2 benchmark
Aggregate	2,420	2,607	187	67%	66%	-1%	49%	48%
MN	190	204	14	77%	81%	4%	n/a	n/a
MO	1,605	1,674	69	62%	61%	-1%	n/a	n/a
NY	349	383	34	75%	73%	-2%	58%	59%
OK	80	163	83	80%	88%	8%	65%	62%
PA	196	183	-13	79%	64%	-14%	42%	44%

Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 Quality Measure Reports.

Notes: Nevada did not submit data in DY2. Oregon excluded due to deviation. New Jersey excluded due to combined state denominator <30 in DY1. Denominators for the Initiation Phase of the measure are systematically smaller than Continuation and Maintenance Phase denominators. Benchmarks from the Annual Reporting on the Quality of Care for Children in Medicaid (FFY 2018 for DY1 and FFY 2019 for DY2), available at <https://www.medicaid.gov/medicaid/quality-of-care/performance-measurement/adult-and-child-health-care-quality-measures/adult-core-set/index.html>.

Table B.14. Follow-up Care for Children Prescribed ADHD Medication: Continuation Phase (ADD-BH cont.)

	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 performance	DY2 performance	Change in performance DY1 to DY2	DY1 benchmark	DY2 benchmark
Aggregate	970	940	-30	82%	89%	6%	59%	59%
MN	93	99	6	83%	89%	6%	n/a	n/a
MO	638	562	-76	83%	91%	8%	n/a	n/a
NY	128	143	15	77%	83%	7%	66%	66%
OK	40	73	33	78%	92%	14%	64%	69%
PA	71	63	-8	89%	73%	-16%	49%	53%

Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 Quality Measure Reports.

Notes: Nevada did not submit data in DY2 Oregon excluded due to deviation. New Jersey excluded due to combined state denominator <30 in DY1. Denominators for the continuation measure reflect the subset of individuals who initiated treatment at the CCBHC; this subset is therefore systematically smaller than initiation denominators. Benchmarks from the Annual Reporting on the Quality of Care for Children in Medicaid (FFY 2018 for DY1 and FFY 2019 for DY2), available at <https://www.medicaid.gov/medicaid/quality-of-care/performance-measurement/adult-and-child-health-care-quality-measures/adult-core-set/index.html>.

Table B.15. Adult BMI Screening and Follow-up Plan (BMI-SF)

	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 performance	DY2 performance	Change in performance DY1 to DY2
Aggregate	144,240	159,028	14,788	50%	64%	13%
MN	11,559	11,538	-21	34%	40%	6%
MO	31,404	31,092	-312	49%	67%	18%
NJ	9,795	13,269	3,474	48%	65%	17%
NY	38,232	41,547	3,315	57%	79%	22%
OK	15,237	16,574	1,337	65%	77%	12%
OR	27,226	30,069	2,843	42%	44%	2%
PA	10,787	14,939	4,152	51%	54%	3%

Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Nevada did not submit data in DY2.

Table B.16. Weight Assessment for Nutrition and Physical Activity Child/Adolescent (WCC-BH)

	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 performance	DY2 performance	Change in performance DY1 to DY2	DY1 benchmark	DY2 benchmark
Aggregate	44,204	49,862	5,658	59%	74%	15%	57%	61%
MN	5,769	5,173	-596	30%	48%	18%	n/a	n/a
MO	8,869	13,511	4,642	85%	91%	7%	n/a	n/a
NJ	3,093	3,463	370	52%	84%	32%	78%	76%
NY	8,704	9,659	955	61%	75%	13%	84%	86%
OK	5,014	5,881	867	54%	77%	22%	5%	5%
OR	10,123	10,024	-99	54%	61%	8%	n/a	60%
PA	2,632	2,151	-481	65%	70%	5%	78%	84%

Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Nevada did not submit data in DY2. Although the title of this measure implies assessment of nutrition and physical activity, the numerator of the measure only captures the proportion of children/adolescents age 3-17 with a BMI percentile documented during the measurement year. Benchmarks from the Annual Reporting on the Quality of Care for Children in Medicaid (FFY 2018 for DY1 and FFY 2019 for DY2), available at <https://www.medicaid.gov/medicaid/quality-of-care/performance-measurement/adult-and-child-health-care-quality-measures/adult-core-set/index.html>.

Table B.17. Diabetes Screening for People with Schizophrenia or Bipolar Disorder who Are Using Antipsychotic Medications (SSD)

	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 performance	DY2 performance	Change in performance DY1 to DY2	DY1 benchmark	DY2 benchmark
Aggregate	18,851	20,731	1,880	76%	78%	2%	80%	80%
MN	1,223	1,100	-123	77%	77%	0%	n/a	n/a
MO	8,434	8,216	-218	74%	74%	0%	84%	88%
NJ	977	2,007	1,030	68%	86%	18%	n/a	n/a
NY	3,635	4,016	381	79%	79%	0%	80%	80%
OK	647	1,049	402	72%	74%	2%	n/a	n/a
OR	2,220	2,558	338	80%	82%	2%	n/a	n/a
PA	1,715	1,785	70	82%	80%	-1%	88%	88%

Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Nevada did not submit data in DY2. Benchmarks from the Annual Reporting on the Quality of Care for Adults in Medicaid (FFY 2018 for DY1 and FFY 2019 for DY2), available at <https://www.medicaid.gov/medicaid/quality-of-care/performance-measurement/adult-and-child-health-care-quality-measures/adult-core-set/index.html>.

Table B.18. Tobacco Use Screening and Cessation Intervention (TSC)

	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 performance	DY2 performance	Change in performance DY1 to DY2
Aggregate	162,238	179,194	16,956	62%	74%	12%
MN	11,015	12,356	1,341	55%	81%	26%
MO	46,383	50,919	4,536	51%	58%	7%
NJ	9,744	15,336	5,592	70%	86%	16%
NY	38,752	42,722	3,970	69%	85%	16%
OK	15,333	16,759	1,426	70%	85%	15%
OR	30,476	28,184	-2,292	69%	75%	6%
PA	10,535	12,918	2,383	54%	65%	12%

Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 Quality Measure Reports.

Notes: Nevada did not submit data in DY2.

Table B.19. Unhealthy Alcohol Use Screening and Brief Counseling (ASC)

	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 performance	DY2 performance	Change in performance DY1 to DY2
Aggregate	144,007	167,006	22,999	59%	74%	15%
MN	9,605	9,966	361	51%	69%	17%
MO	37,596	50,131	12,535	54%	59%	5%
NJ	10,080	14,134	4,054	76%	78%	2%
NY	29,671	33,373	3,702	69%	84%	15%
OK	15,333	16,744	1,411	65%	85%	20%
OR	28,100	27,917	-183	58%	71%	13%
PA	13,622	14,741	1,119	42%	91%	49%

Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 Quality Measure Reports.

Notes: Nevada did not submit data in DY2.

Table B.20. Initiation of AOD Dependence Treatment (IET-BH Int.)								
	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 performance	DY2 performance	Change in performance DY1 to DY2	DY1 benchmark	DY2 benchmark
Aggregate	13,160	13,982	822	48%	46%	-2%	40%	41%
MN	2,412	2,175	-237	39%	38%	-2%	n/a	38%
MO	2,276	2,420	144	51%	47%	-4%	45%	46%
NJ	333	516	183	65%	72%	7%	n/a	n/a
NY	6,081	6,383	302	54%	51%	-3%	46%	44%
OR	988	1,458	470	46%	43%	-3%	39%	38%
PA	1,070	1,030	-40	16%	15%	-1%	41%	42%

Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 Quality Measure Reports.

Notes: Table summarizes performance for adults age 18 and older. Nevada did not submit data in DY2. One New Jersey clinic excluded due to deviation in denominator calculation in DY2 different from DY1. All 3 Oklahoma clinics excluded due to combined state denominator <30. Benchmark "Total AOD Abuse or Dependence" from the Annual Reporting on the Quality of Care for Adults in Medicaid (FFY 2018 and FFY 2019), available at <https://www.medicaid.gov/medicaid/quality-of-care/performance-measurement/adult-and-child-health-care-quality-measures/adult-core-set/index.html>. Benchmark Ages 18-64.

Table B.21. Engagement of AOD Dependence Treatment (IET-BH Eng.)								
	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 performance	DY2 performance	Change in performance DY1 to DY2	DY1 benchmark	DY2 benchmark
Aggregate	13,160	13,984	824	28%	27%	1%	16%	16%
MN	2,412	2,175	-237	14%	14%	0%	n/a	12%
MO	2,276	2,420	144	39%	36%	-3%	16%	16%
NJ	333	516	183	51%	75%	24%	n/a	n/a
NY	6,081	6,383	302	33%	31%	-3%	20%	19%
OR	988	1,460	472	15%	14%	-1%	14%	11%
PA	1,070	1,030	-40	4%	5%	1%	34%	28%

Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 Quality Measure Reports.

Notes: Table summarizes performance for adults age 18 and older. Nevada did not submit data in DY2. One New Jersey clinic excluded due to deviation in denominator calculation in DY2 different from DY1. All 3 Oklahoma clinics excluded due to combined state denominator <30. Benchmark "Total AOD Abuse or Dependence" from the Annual Reporting on the Quality of Care for Adults in Medicaid (FFY 2018 for DY1 and FFY 2019 for DY2), available at <https://www.medicaid.gov/medicaid/quality-of-care/performance-measurement/adult-and-child-health-care-quality-measures/adult-core-set/index.html>. Benchmark Ages 18-64.

Table B.22. Follow-up after ED Visit for Mental Illness: 30-day (FUM 30-day)

	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 performance	DY2 performance	Change in performance DY1 to DY2	DY1 benchmark	DY2 benchmark
Aggregate	13,948	13,647	-301	71%	68%	-2%	54%	54%
MN	2,441	2,123	-318	79%	75%	-4%	65%	63%
MO	5,066	5,172	106	69%	70%	1%	57%	50%
NJ	1,816	1,983	167	23%	23%	0%	56%	61%
NY	2,496	2,403	-93	89%	86%	-3%	71%	69%
OK	348	616	268	82%	83%	1%	50%	46%
OR	1,781	1,350	-431	84%	82%	-2%	59%	69%

Source: Mathematica and RAND analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Nevada did not submit data in DY2. Pennsylvania excluded due to combined state denominator <30. Benchmarks from the Annual Reporting on the Quality of Care for Adults in Medicaid (FFY 2018 for DY1 and FFY 2019 for DY2), available at <https://www.medicaid.gov/medicaid/quality-of-care/performance-measurement/adult-and-child-health-care-quality-measures/adult-core-set/index.html>.

Table B.23. Follow-up after ED Visit for AOD Dependence (FUA 30-day)

	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 performance	DY2 performance	Change in performance DY1 to DY2	DY1 benchmark	DY2 benchmark
Aggregate	6,287	6,843	556	39%	39%	0%	20%	21%
MN	1,037	910	-127	43%	46%	3%	28%	32%
MO	1,562	1,645	83	33%	31%	-2%	5%	32%
NJ	562	950	388	6%	9%	3%	n/a	n/a
NY	1,719	2,034	315	56%	57%	1%	27%	28%
OK	42	66	24	12%	21%	9%	44%	12%
OR	823	667	-156	33%	36%	3%	n/a	n/a
PA	542	571	29	38%	37%	-1%	23%	25%

Source: Mathematica and RAND analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Nevada did not submit data in DY2. Benchmarks from the Annual Reporting on the Quality of Care for Adults in Medicaid (FFY 2018 for DY1 and FFY 2019 for DY2), available at <https://www.medicaid.gov/medicaid/quality-of-care/performance-measurement/adult-and-child-health-care-quality-measures/adult-core-set/index.html>.

Table B.24. Follow-up after Hospitalization for Mental Illness, Adult (FUH-BH-A 30-day)

	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 performance	DY2 performance	Change in performance DY1 to DY2	DY1 benchmark	DY2 benchmark
Aggregate	12,508	10,621	-1,887	57%	63%	6%	58%	53%
MN	1,317	1,154	-163	73%	73%	0%	63%	59%
MO	3,579	3,759	180	74%	74%	0%	38%	33%
NJ	327	420	93	23%	32%	9%	32%	31%
NY	1,439	1,534	95	82%	82%	0%	61%	n/a
OK	200	313	113	94%	87%	-7%	39%	39%
OR	710	846	136	94%	93%	0%	n/a	n/a
PA	4,936	2,595	-2,341	27%	23%	-5%	56%	56%

Source: Mathematica and RAND analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Nevada did not submit data in DY2. Benchmark ages 18+. Benchmarks from the Annual Reporting on the Quality of Care for Adults in Medicaid (FFY 2018 for DY1 and FFY 2019 for DY2), available at <https://www.medicaid.gov/medicaid/quality-of-care/performance-measurement/adult-and-child-health-care-quality-measures/adult-core-set/index.html>.

Table B.25. Follow-up after Hospitalization for Mental Illness, Child/Adolescent (FUH-BH-C 30-day)

	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 performance	DY2 performance	Change in performance DY1 to DY2	DY1 benchmark	DY2 benchmark
Aggregate	5,632	5,947	315	70%	74%	4%	65%	66%
MN	668	644	-24	74%	82%	8%	70%	73%
MO	3,146	3,497	351	76%	78%	2%	56%	56%
NJ	77	105	28	21%	35%	14%	32%	31%
NY	372	442	70	87%	88%	1%	85%	n/a
OK	288	470	182	91%	93%	2%	51%	66%
OR	148	121	-27	93%	88%	-5%	n/a	n/a
PA	933	773	-160	37%	29%	-7%	74%	77%

Source: Mathematica and RAND analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Nevada did not submit data in DY2. Benchmarks from the Annual Reporting on the Quality of Care for Children in Medicaid (FFY 2018 for DY1 and FFY 2019 for DY2), available at <https://www.medicaid.gov/medicaid/quality-of-care/performance-measurement/adult-and-child-health-care-quality-measures/adult-core-set/index.html>.

Table B.26. Plan All-Cause Readmission, Adult Ages 18+ (PCR-BH)

	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 performance	DY2 performance	Change in performance DY1 to DY2	DY1 benchmark	DY2 benchmark
Aggregate	31,339	26,998	-4,341	22%	16%	-6%	n/a	n/a
MN	3,048	2,786	-262	22%	22%	0%	17%	17%
MO	13,144	8,219	-4,925	26%	24%	-2%	22%	n/a
NJ	1,397	2,175	778	20%	14%	-6%	15%	16%
NY	7,043	8,321	1,278	24%	8%	-17%	n/a	14%
OK	417	669	252	10%	10%	0%	29%	22%
OR	2,843	2,872	29	15%	13%	-2%	n/a	n/a
PA	3,447	1,956	-1,491	8%	15%	8%	13%	13%

Source: Mathematica and RAND analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: A lower performance (i.e., rate of readmission) is better for PCR-BH measure; negative change in performance is improvement. Nevada did not submit data in DY2.

Benchmark Ages 18-64. Benchmark "Observed Readmission Rate" from Annual Reporting on the Quality of Care for Adults in Medicaid (FFY 2018 for DY1 and FFY 2019 for DY2), available at <https://www.medicaid.gov/medicaid/quality-of-care/performance-measurement/adult-and-child-health-care-quality-measures/adult-core-set/index.html>.

Table B.27. PEC: Adults Reporting Positively about Access

	DY1 Denominator	DY2 Denominator	Change in Denominator DY1 to DY2	DY1 Performance	DY2 Performance	Change in Performance DY1 to DY2	DY1 Benchmark	DY2 Benchmark
Aggregate	13,313	14,889	1,576	84%	86%	2%	89%	87%
MN	1,602	1,080	-522	81%	82%	1%	81%	82%
MO	4,918	5,542	624	87%	88%	1%	88%	90%
NJ	2,225	2,668	443	83%	91%	8%	97%	98%
NY	2,942	2,797	-145	84%	85%	0%	89%	86%
OK	265	231	-34	86%	84%	-2%	86%	89%
OR	779	958	179	67%	66%	-1%	72%	71%
PA	582	1,613	1,031	91%	91%	0%	95%	96%

Source: Mathematica and RAND analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Nevada did not submit data in DY2. Benchmarks reported are from the Annual Report URS Tables, available at <https://www.samhsa.gov/data/data-we-collect/urs-uniform-reporting-system>.

Table B.28. PEC: Adults Reporting Positively about Quality and Appropriateness

	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 performance	DY2 performance	Change in performance DY1 to DY2	DY1 benchmark	DY2 benchmark
Aggregate	13,569	15,611	2,042	88%	90%	3%	90%	90%
MN	1,620	1,077	-543	84%	86%	2%	82%	83%
MO	4,869	5,507	638	91%	90%	-1%	92%	92%
NJ	2,580	3,483	903	85%	93%	9%	98%	99%
NY	2,908	2,762	-146	91%	92%	1%	89%	89%
OK	262	231	-31	88%	87%	-1%	88%	91%
OR	748	958	210	68%	73%	5%	69%	79%
PA	582	1,593	1,011	90%	94%	4%	96%	98%

Source: Mathematica and RAND analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Nevada did not submit data in DY2. Benchmarks reported are from the Annual Report URS Tables, available at <https://www.samhsa.gov/data/data-we-collect/urs-uniform-reporting-system>.

Table B.29. PEC: Adults Reporting Positively about Outcomes

	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 performance	DY2 performance	Change in performance DY1 to DY2	DY1 benchmark	DY2 benchmark
Aggregate	12,976	15,008	2,032	70%	72%	2%	80%	75%
MN	1,610	1,062	-548	76%	77%	1%	76%	79%
MO	4,744	5,473	729	69%	66%	-4%	70%	70%
NJ	2,249	3,158	909	69%	86%	17%	94%	94%
NY	2,794	2,554	-240	72%	70%	-2%	78%	77%
OK	258	221	-37	64%	65%	1%	62%	63%
OR	745	958	213	37%	48%	11%	40%	53%
PA	576	1,582	1,006	90%	78%	-12%	83%	89%

Source: Mathematica and RAND analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Nevada did not submit data in DY2. Benchmarks reported are from the Annual Report URS Tables, available at <https://www.samhsa.gov/data/data-we-collect/urs-uniform-reporting-system>.

Table B.30. PEC: Adults Reporting on Participation in Treatment Planning

	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 performance	DY2 performance	Change in performance DY1 to DY2	DY1 benchmark	DY2 benchmark
Aggregate	12,158	13,381	1,223	82%	87%	4%	86%	85%
MN	1,619	1,061	-558	87%	86%	-1%	80%	84%
MO	4,703	5,356	653	85%	93%	9%	86%	86%
NJ	1,446	1,584	138	81%	88%	7%	92%	99%
NY	2,822	2,647	-175	80%	82%	2%	81%	81%
OK	262	229	-33	90%	90%	-1%	83%	86%
OR	726	958	232	65%	58%	-7%	66%	65%
PA	580	1,546	966	86%	87%	0%	89%	90%

Source: Mathematica and RAND analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Nevada did not submit data in DY2. Benchmarks reported are from the Annual Report URS Tables, available at <https://www.samhsa.gov/data/data-we-collect/urs-uniform-reporting-system>.

Table B.31. PEC: Adults Reporting about General Satisfaction with Services

	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 performance	DY2 performance	Change in performance DY1 to DY2	DY1 benchmark	DY2 benchmark
Aggregate	12,735	14,179	1,444	89%	90%	1%	90%	90%
MN	1,622	1,060	-562	91%	88%	-3%	91%	84%
MO	4,922	5,564	642	92%	92%	0%	93%	93%
NJ	1,617	1,910	293	87%	92%	5%	97%	99%
NY	2,964	2,828	-136	90%	89%	-1%	90%	90%
OK	267	233	-34	92%	90%	-2%	90%	91%
OR	771	958	187	69%	74%	4%	73%	76%
PA	572	1,626	1,054	87%	93%	5%	88%	90%

Source: Mathematica and RAND analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Nevada did not submit data in DY2. Benchmarks reported are from the Annual Report URS Tables, available at <https://www.samhsa.gov/data/data-we-collect/urs-uniform-reporting-system>.

Table B.32. Y/FEC: Families Reporting Positively about Access

	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 performance	DY2 performance	Change in performance DY1 to DY2	DY1 benchmark	DY2 benchmark
Aggregate	7,097	7,870	773	83%	90%	7%	85%	87%
MN	862	626	-236	79%	80%	1%	90%	82%
MO	3,950	4,262	312	83%	97%	14%	85%	87%
NJ	339	374	35	69%	73%	4%	82%	79%
NY	781	798	17	97%	96%	-1%	96%	96%
OK	202	178	-24	94%	94%	1%	90%	90%
OR	724	881	157	75%	69%	-6%	74%	70%
PA	239	751	512	87%	83%	-4%	91%	91%

Source: Mathematica and RAND analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Nevada did not submit data in DY2. Benchmarks reported are from the Annual Report URS Tables, available at <https://www.samhsa.gov/data/data-we-collect/urs-uniform-reporting-system>.

Table B.33. Y/FEC: Family Members Reporting Positively about General Satisfaction for Children

	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 performance	DY2 performance	Change in performance DY1 to DY2	DY1 benchmark	DY2 benchmark
Aggregate	7,168	7,978	810	86%	92%	6%	87%	88%
MN	866	665	-201	91%	88%	-3%	82%	86%
MO	3,995	4,300	305	87%	98%	11%	88%	89%
NJ	386	425	39	76%	79%	3%	74%	68%
NY	753	779	26	97%	97%	0%	97%	96%
OK	201	177	-24	93%	92%	-2%	91%	87%
OR	726	881	155	66%	69%	3%	68%	71%
PA	241	751	510	85%	89%	4%	90%	90%

Source: Mathematica and RAND analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Nevada did not submit data in DY2. Benchmarks reported are from the Annual Report URS Tables, available at <https://www.samhsa.gov/data/data-we-collect/urs-uniform-reporting-system>.

Table B.34. Y/FEC: Families Reporting Positively about Outcomes for Children

	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 performance	DY2 performance	Change in performance DY1 to DY2	DY1 benchmark	DY2 benchmark
Aggregate	7,150	7,973	823	69%	84%	15%	72%	72%
MN	851	650	-201	80%	82%	2%	70%	78%
MO	3,991	4,303	312	66%	93%	28%	67%	67%
NJ	386	437	51	65%	66%	1%	58%	49%
NY	753	771	18	86%	90%	4%	86%	87%
OK	200	177	-23	60%	60%	1%	66%	62%
OR	729	881	152	59%	60%	1%	62%	63%
PA	240	754	514	84%	72%	-12%	81%	78%

Source: Mathematica and RAND analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Nevada did not submit data in DY2. Benchmarks reported are from the Annual Report URS Tables, available at <https://www.samhsa.gov/data/data-we-collect/urs-uniform-reporting-system>.

Table B.35. Y/FEC: Family Members Reporting on Participation in Treatment Planning for Their Children

	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 performance	DY2 performance	Change in performance DY1 to DY2	DY1 benchmark	DY2 benchmark
Aggregate	7,142	7,841	699	90%	93%	3%	87%	89%
MN	857	576	-281	90%	91%	1%	84%	82%
MO	3,984	4,285	301	91%	98%	6%	92%	93%
NJ	355	386	31	76%	77%	1%	84%	82%
NY	774	792	18	99%	99%	0%	97%	97%
OK	202	178	-24	94%	92%	-2%	90%	91%
OR	729	881	152	79%	76%	-3%	80%	81%
PA	241	743	502	87%	91%	4%	95%	96%

Source: Mathematica and RAND analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Nevada did not submit data in DY2. Benchmarks reported are from the Annual Report URS Tables, available at <https://www.samhsa.gov/data/data-we-collect/urs-uniform-reporting-system>.

Table B.36. Y/FEC: Family Members Reporting High Cultural Sensitivity of Staff

	DY1 denominator	DY2 denominator	Change in denominator DY1 to DY2	DY1 performance	DY2 performance	Change in performance DY1 to DY2	DY1 benchmark	DY2 benchmark
Aggregate	7,174	7,927	753	93%	94%	1%	93%	94%
MN	865	656	-209	90%	88%	-2%	90%	90%
MO	3,995	4,303	308	94%	98%	5%	95%	95%
NJ	361	407	46	79%	81%	2%	86%	86%
NY	785	790	5	100%	96%	-3%	99%	99%
OK	201	176	-25	97%	98%	1%	97%	95%
OR	725	881	156	88%	78%	-9%	88%	89%
PA	242	714	472	95%	95%	0%	96%	95%

Source: Mathematica and RAND analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Nevada did not submit data in DY2. Benchmarks reported are from the Annual Report URS Tables, available at <https://www.samhsa.gov/data/data-we-collect/urs-uniform-reporting-system>.

Table B.37. Quality Measures and Performance Thresholds Used to Determine QBPs

CCBHC-reported measures	Required or optional for determining QBPs ^a	States with QBPs that used the measure to determine QBPs ^b
Child and adolescent major depressive disorder: SRA (SRA-BH-C)	Required	All
Adult major depressive disorder: SRA (SRA-BH-A; NQF-0104)	Required	All
Screening for Clinical Depression and Follow-Up Plan (CDF-A)	Optional	MN
Depression Remission at 12 Months (NQF-0710)	Optional	None
State-reported measures		
Adherence to Antipsychotic Medications for Individuals with Schizophrenia (SAA-BH)	Required	All
Follow-Up After Hospitalization for Mental Illness, ages 21+ (adult) (FUH-BH-A)	Required	All
Follow-Up After Hospitalization for Mental Illness, ages 6-21 (child/adolescent) (FUH-BH-C)	Required	All
Initiation and Engagement of AOD Dependence Treatment (IET-BH)	Required	All
Plan All-Cause Readmission Rate (PCR-AD)	Optional	MN, NV, NY
Follow-up Care for Children Prescribed ADHD Medication (ADD-C)	Optional	None
Antidepressant Medication Management (AMM-A)	Optional	None

Source: "Appendix III - Section 223 Demonstration Programs to Improve Community Mental Health Services Prospective Payment System (PPS) Guidance." Available at <https://www.samhsa.gov/sites/default/files/grants/pdf/sm-16-001.pdf#page=94>. Accessed July 26, 2019. Data from interviews with state Medicaid and behavioral health agency officials conducted by Mathematica and the RAND Corporation, February 2019.

a. As required in the CCBHC certification criteria.

b. All demonstration states except Oregon offered QBPs to CCBHCs.

Except for New Jersey, all the states reported that they planned to equally consider performance on all the measures they selected to determine whether to award a QBP. Other features of states' QBP thresholds and determination processes varied:

- Minnesota did not set performance thresholds before the demonstration began. Rather, the state identified minimum performance thresholds during DY1 for each of its selected measures. Due to the absence of state-specific historical performance data and comparable regional or national benchmark data on the adult and child SRA measures (SRA-BH-A and SRA-BH-C), Minnesota used data from the initial six months of the demonstration to help determine the minimum performance level for these measures.
- Missouri used state-wide Missouri Department of Mental Health averages from the year before the demonstration as the minimum performance threshold, if such data were available by the end of the first quarter of DY1. If data were not available, Missouri substituted published national rates for the most recent time period available. Payments were triggered for DY1 if a clinic performed above the threshold or showed improvement from its own prior year rate to DY1.
- Nevada clinics were eligible to receive QBPs if they submitted data on all measures in DY1. The state used performance on the DY1 measures to establish a benchmark by which to assess progress and make DY2 QBPs. In DY2, Nevada clinics must submit data on all measures to earn a portion of the bonus payment and also meet the performance thresholds to earn the remaining portion of the bonus

payment. The DY2 performance thresholds require CCBHCs to either meet state-specified improvement goals for each measure or improve on the measures from DY1 to DY2 by at least a 10 percent reduction in the gap between DY1 performance and the improvement goal. Four of the state-specified improvement goals are based on HEDIS National Medicaid averages.

- New Jersey used HEDIS National Medicaid averages, where available, as the performance thresholds. If an appropriate national average was not available, New Jersey created a sliding scale based on CCBHC data, with the lowest-scoring CCBHC receiving no payment and the highest-scoring CCBHC receiving maximum payment for that measure.
- New York established performance thresholds for each measure using existing data from providers and/or Medicaid claims. The state used a similar process to establish thresholds for DY2 using DY1 data. New York CCBHCs are eligible for QBPs if they meet performance thresholds for all nine of the state’s selected measures. The thresholds range from 0 percent improvement (maintaining the minimum performance threshold level) to 10 percent improvement.
- Oklahoma collected and analyzed data from the initial six months of the demonstration to establish minimum performance thresholds for DY1 for each required measure. To earn the QBP, each provider must meet the benchmarks for the second six-month period. For the third six-month payment period, providers must meet the benchmarks plus an additional 3 percent. For the final and fourth six-month period, providers must meet the benchmarks plus an additional 5 percent.
- Pennsylvania used data from the year before the demonstration to determine DY1 performance thresholds for four of the six required measures. Because prior data did not exist for the SRA-BH-A and SRA-BH-C measures, the state used data from the initial six months of the demonstration to determine DY1 thresholds for these measures. DY1 data will be used to determine the DY2 thresholds for all required measures. The state required CCBHCs to improve on each measure by at least 1 percent each year to be eligible for the bonus payment for that measure. Payments could be higher for improvement greater than 1 percent. For example, 1 percent above threshold on the SRA-BH-A measure would earn 10 percent of the payment tied to that measure, whereas 10 percent above the threshold would earn 100 percent of the payment tied to that measure.

Table B.38. Measure Performance Across Domains from DY1 to DY2

Measure Domain	Measure Description	Measure Name	MN	MO	NJ	NY	OK	OR	PA
Domain 1: Access to care and timeliness of initial evaluation	Time to Initial Evaluation, adult	I-EVAL ^c							
Domain 2: Depression and suicidality screening and follow-up	Child and Adolescent Major Depressive Disorder: Suicide Risk Assessment	SRA-BH-C ^c							
	Adult Major Depressive Disorder: Suicide Risk Assessment	SRA-A ^c							
	Screening for Clinical Depression and Follow-up Plan	CDF-BH ^c							
	Depression Remission at 12 Months	DEP-REM-12 ^c			n/a				
Domain 3: Psychiatric medication management and adherence	Adherence to Antipsychotic Medications for Individuals with Schizophrenia	SAA-BH ^s							
	Antidepressant Medication Management	AMM-BH-cont.							

Table B.38. (continued)

Measure Domain	Measure Description	Measure Name	MN	MO	NJ	NY	OK	OR	PA
Domain 4: Follow-up and medication management for children/adolescents with ADHD	Follow-up Care for Children Prescribed ADHD Medication	ADD-BH-cont.	▲	▲	n/a	▲	▲	n/a	▼
Domain 5: Physical health care	Adult Body Mass Index Screening and Follow-up Plan	BMI-SF ^c	▲	▲	▲	▲	▲	○	○
	Weight Assessment for Nutrition and Physical Activity for Children/Adolescents	WCC-BH ^c	▲	▲	▲	▲	▲	▲	▲
	Diabetes Screening for People with Schizophrenia or Bipolar Disorder who are Using Antipsychotic Medications	SSD ^s	○	○	▲	○	○	○	○
Domain 6: Substance use screening and treatment	Tobacco Use - Screening and Cessation Intervention	TSC ^c	▲	▲	▲	▲	▲	▲	▲
	Unhealthy Alcohol Use - Screening and Brief Counseling	ASC ^c	▲	▲	○	▲	▲	▲	▲
	Initiation and Engagement of AOD Dependence Treatment	IET-BH ^s	○	○	▲	○	n/a	○	○
Domain 7: ED and hospital transitions	Follow-up After ED Visit for Mental Illness	FUM ^s	○	○	○	○	○	○	n/a
	Follow-up After ED Visit for Alcohol or Other Dependence	FUA ^s	○	○	○	○	▲	○	○
	Follow-up After Hospitalization for Mental Illness, adult	FUH-BH-A ^s	○	○	▲	○	▼	○	▼
	Follow-up After Hospitalization for Mental Illness, child/adolescent	FUH-BH-C ^s	▲	○	▲	○	○	▼	▼
	Plan All-Cause Readmission Rate, adult	PCR-BH ^s	○	○	▼	▼	○	○	▲
Domain 8: Consumer and family experiences with CCBHCs	Patient Experience of Care Survey, adult	PEC ^s	○	○	▲	○	○	○	▲
	Youth/Family Experience of Care Survey	Y/FEC ^s	○	▲	○	○	○	○	○

Source: Mathematica and RAND analysis of DY1 and DY2 CCBHC Quality Measure Reports.

Notes: Nevada did not submit data in DY2. Change definitions are as follows:

▲ Improved = 5% or more improvement in aggregate performance across CCBHCs in state from DY1 to DY2.

▼ Declined = 5% or more decline in in aggregate performance across CCBHCs in state from DY1 to DY2.

○ Stable.

^c = Clinic-reported measure.

^s = State-reported measure.

APPENDIX C:
CERTIFIED COMMUNITY BEHAVIORAL HEALTH CLINIC
PAYMENT RATES AND COSTS

The tables below show the visit-day rates for each clinic in the PPS-1 states.

Table C.1. Changes in Minnesota CCBHC Rates from DY1 to DY2			
	Rate		
	DY1	DY2	Change
MN Clinic 1	\$277	\$165	\$(112)
MN Clinic 2	\$269	\$274	\$5
MN Clinic 3	\$321	\$290	\$(31)
MN Clinic 4	\$709	\$664	\$(45)
MN Clinic 5	\$478	\$414	\$(64)
MN Clinic 6	\$363	\$336	\$(27)
Average across clinics	\$403	\$357	\$(46)

Source: Mathematica and the RAND Corporation analysis of state reported CCBHC rates.

Note: Adjusted to 2020 dollars.

Table C.2. Changes in Missouri CCBHC Rates from DY1 to DY2			
	Rate		
	DY1	DY2	Change
MO Clinic 1	\$248	\$246	\$(2)
MO Clinic 2	\$262	\$260	\$(2)
MO Clinic 3	\$231	\$229	\$(2)
MO Clinic 4	\$268	\$266	\$(2)
MO Clinic 5	\$190	\$189	\$(2)
MO Clinic 6	\$222	\$220	\$(2)
MO Clinic 7	\$190	\$188	\$(2)
MO Clinic 8	\$241	\$239	\$(2)
MO Clinic 9	\$176	\$174	\$(1)
MO Clinic 10	\$234	\$232	\$(2)
MO Clinic 11	\$201	\$200	\$(2)
MO Clinic 12	\$194	\$192	\$(2)
MO Clinic 13	\$244	\$242	\$(2)
MO Clinic 14	\$268	\$265	\$(2)
MO Clinic 15	\$190	\$189	\$(2)
Average across clinics	\$224	\$222	\$(2)

Source: Mathematica and the RAND Corporation analysis of state reported CCBHC rates.

Note: Adjusted to 2020 dollars.

Table C.3. Changes in New York CCBHC Rates from DY1 to DY2

	Rate		
	DY1	DY2	Change
NY Clinic 1	\$280	\$220	\$(59)
NY Clinic 2	\$344	\$240	\$(105)
NY Clinic 3	\$324	\$316	\$(8)
NY Clinic 4	\$259	\$224	\$(36)
NY Clinic 5	\$259	\$255	\$(4)
NY Clinic 6	\$219	\$211	\$(8)
NY Clinic 7	\$310	\$267	\$(44)
NY Clinic 8	\$312	\$235	\$(76)
NY Clinic 9	\$398	\$283	\$(115)
NY Clinic 10	\$183	\$210	\$27
NY Clinic 11	\$334	\$324	\$(10)
NY Clinic 12	\$221	\$221	\$(0)
NY Clinic 13	\$404	\$272	\$(132)
Average across clinics	\$296	\$252	\$(44)

Source: Mathematica and the RAND Corporation analysis of state reported CCBHC rates.

Note: Adjusted to 2020 dollars.

Table C.4. Changes in Oregon CCBHC Rates from DY1 to DY2

	Rate		
	DY1	DY2	Change
OR Clinic 1	\$272	\$274	\$3
OR Clinic 2	\$286	\$287	\$0
OR Clinic 3	\$286	\$302	\$16
OR Clinic 4	\$324	\$324	\$(1)
OR Clinic 5	\$340	\$344	\$3
OR Clinic 6	\$197	\$196	\$(1)
OR Clinic 7	\$341	\$340	\$(2)
OR Clinic 8	\$297	\$297	\$(0)
OR Clinic 9	\$335	\$333	\$(2)
OR Clinic 10	\$208	\$210	\$2
OR Clinic 11	\$284	\$281	\$(3)
OR Clinic 12	\$231	\$229	\$(2)
Average across clinics	\$284	\$285	\$1

Source: Mathematica and the RAND Corporation analysis of state reported CCBHC rates.

Note: Adjusted to 2020 dollars.

Table C.5. Changes in Pennsylvania CCBHC Rates from DY1 to DY2

	Rate		
	DY1	DY2	Change
PA Clinic 1	\$337	\$234	\$(103)
PA Clinic 2	\$419	\$236	\$(183)
PA Clinic 3	\$184	\$250	\$67
PA Clinic 4	\$324	\$153	\$(172)
PA Clinic 5	\$161	\$217	\$57
PA Clinic 6	\$215	\$189	\$(26)
PA Clinic 7	\$415	\$296	\$(119)
Average across clinics	\$293	\$225	\$(68)

Source: Mathematica and the RAND Corporation analysis of state reported CCBHC rates.

Note: Adjusted to 2020 dollars.

Table C.6. Nevada CCBHC Rates, DY1

	Rate
	DY1
NV Clinic 1	\$193
NV Clinic 2	\$209
NV Clinic 3	\$228
Average across clinics	\$210

Source: Mathematica and the RAND Corporation analysis of state reported CCBHC rates.

Notes: Nevada did not submit DY2 rate information.

Adjusted to 2020 dollars.

The tables below show the visit-month rates for each clinic in the two PPS-2 states, New Jersey and Oklahoma. We calculated the blended rates as weighted averages of the standard population and special population rates, with rates drawn from the proportion of visit-months within each category.

New Jersey set rates for its standard population and for its SMI population by calculating the weighted average of the costs for each population based on data from two years before DY1. Then the state blended the remaining three populations' cost and visit-month data to create a single DY1 rate for the remaining three special populations. Using similar methods in DY2, New Jersey relied on data from two years before DY2. The state used the MEI adjustment contained in the DY1 cost reports (cost reports containing historical data from two years before DY1) to create DY1 rates, then used the MEI adjustments in the "DY2 cost reports" (cost reports containing historical data from two years before DY2), and then inflated these an additional 3 percent to create DY2 rates.

Table C.7. Changes in New Jersey CCBHC Blended Rates from DY1 to DY2

	Blended rate		
	DY1	DY2	Change
NJ Clinic 1	\$1,001	\$930	(\$71)
NJ Clinic 2	\$654	\$691	\$36
NJ Clinic 3	\$676	\$814	\$137
NJ Clinic 4	\$742	\$724	(\$18)
NJ Clinic 5	\$682	\$803	\$121
NJ Clinic 6	\$787	\$958	\$172
NJ Clinic 7	\$608	\$651	\$44
Average across NJ clinics	\$736	\$796	\$60

Source: Mathematica and the RAND Corporation analysis of state reported CCBHC rates.

Note: Adjusted to 2020 dollars.

Table C.8. Changes in New Jersey CCBHC Population-Specific Rates from DY1 to DY2

	Standard population rate			SMI rate			SUD rate			PTSD rate			SED rate		
	DY1	DY2	Change	DY1	DY2	Change	DY1	DY2	Change	DY1	DY2	Change	DY1	DY2	Change
NJ Clinic 1	\$1,091	\$884	\$(207)	\$898	\$938	\$40	\$994	\$1,061	\$67	\$994	\$1,061	\$67	\$994	\$1,061	\$67
NJ Clinic 2	\$548	\$650	\$102	\$883	\$765	\$(118)	\$879	\$806	\$(74)	\$806	\$747	\$(59)	\$733	\$747	\$14
NJ Clinic 3	\$670	\$524	\$(146)	\$672	\$992	\$319	\$709	\$1,104	\$394	\$712	\$1,104	\$391	\$728	\$1,104	\$376
NJ Clinic 4	\$666	\$630	\$(36)	\$797	\$785	\$(12)	\$799	\$804	\$6	\$654	\$661	\$7	\$519	\$661	\$142
NJ Clinic 5	\$489	\$661	\$172	\$839	\$903	\$64	\$917	\$1,232	\$315	\$702	\$810	\$108	\$702	\$810	\$108
NJ Clinic 6	\$673	\$879	\$206	\$855	\$1,011	\$155	\$851	\$935	\$84	\$944	\$1,011	\$67	\$944	\$1,011	\$67
NJ Clinic 7	\$528	\$514	\$(14)	\$619	\$681	\$63	\$768	\$950	\$183	\$768	\$712	\$(56)	\$768	\$645	\$(122)
Average across NJ clinics	\$667	\$678	\$11	\$795	\$868	\$73	\$845	\$984	\$139	\$797	\$872	\$75	\$770	\$863	\$93

Source: Mathematica and the RAND Corporation analysis of state reported CCBHC rates.

Notes: Adjusted to 2020 dollars. Regarding the state's PPS-2 Special populations, New Jersey used primary diagnosis (ICD-9 and ICD-10 codes) from historical claims data to categorize individuals receiving CCBHC services into special populations: SMI, SUD, PTSD, and SED. The New Jersey CCBHC Cost Report Instructions Appendices includes a complete list of the ICD-9 and ICD-10 diagnosis codes the state used to identify these populations.

SED = term used by the state.

Oklahoma set rates for its standard population, as well as five special populations.

Table C.9. Changes in Oklahoma CCBHC Blended Rates from DY1 to DY2

	Blended rate		
	DY1	DY2	Change
OK Clinic 1	\$777	\$1,245	\$468
OK Clinic 2	\$566	\$612	\$46
OK Clinic 3	\$759	\$754	(\$5)
Average across Oklahoma clinics	\$756	\$870	\$169

Source: Mathematica and the RAND Corporation analysis of state reported CCBHC rates.

Note: Adjusted to 2020 dollars.

Table C.10. Changes in Oklahoma CCBHC Population-Specific Rates from DY1 to DY2

	Standard population rate			Special 1			Special 2			Special 3			Special 5		
	DY1	DY2	Change	DY1	DY2	Change	DY1	DY2	Change	DY1	DY2	Change	DY1	DY2	Change
OK Clinic 1	\$729	\$1,062	\$333	\$1,087	\$1,585	\$498	\$1,262	\$1,839	\$577	\$1,329	\$1,941	\$612	\$869	\$1,256	\$386
OK Clinic 2	\$566	\$594	\$28	\$735	\$932	\$198	\$1,047	\$923	\$(123)	\$796	\$311	\$(485)	\$734	\$931	\$197
OK Clinic 3	\$733	\$704	\$(30)	\$1,344	\$965	\$(379)	\$1,311	\$1,325	\$14	\$1,239	\$1,451	\$213	\$1,045	\$1,565	\$520
Average across Oklahoma clinics	\$676	\$787	\$110	\$1,055	\$1,161	\$106	\$1,206	\$1,362	\$156	\$1,121	\$1,234	\$113	\$883	\$1,251	\$368

Source: Mathematica and the RAND Corporation analysis of state reported CCBHC rates.

Notes: Adjusted to 2020 dollars. Regarding the state's PPS-2 Special populations, Oklahoma categorized individuals receiving CCBHC services into special populations: Special population 1 (High-Risk SMI), Special population 2 (High-Risk SED), Special population 3 (Adults with significant SUD), Special population 4 (Adolescents with significant SUD), and Special population 5 (Chronic homelessness or first psychotic episode for children and adults). The Oklahoma CCBHC Demonstration Application, Attachment 2: Target Medicaid Population(s) lists the criteria for inclusion into the special populations.

The Special Population 4 (Adolescents with significant SUD) Rate was only used by 1 of the OK clinics in DY2 at an amount \$695 lower than in DY1. Because only 1 clinic used this rate, it is excluded from the table.

The figures below summarize clinic-level information on changes from DY1 to DY2 in the PPS rates and per visit-day or month costs.

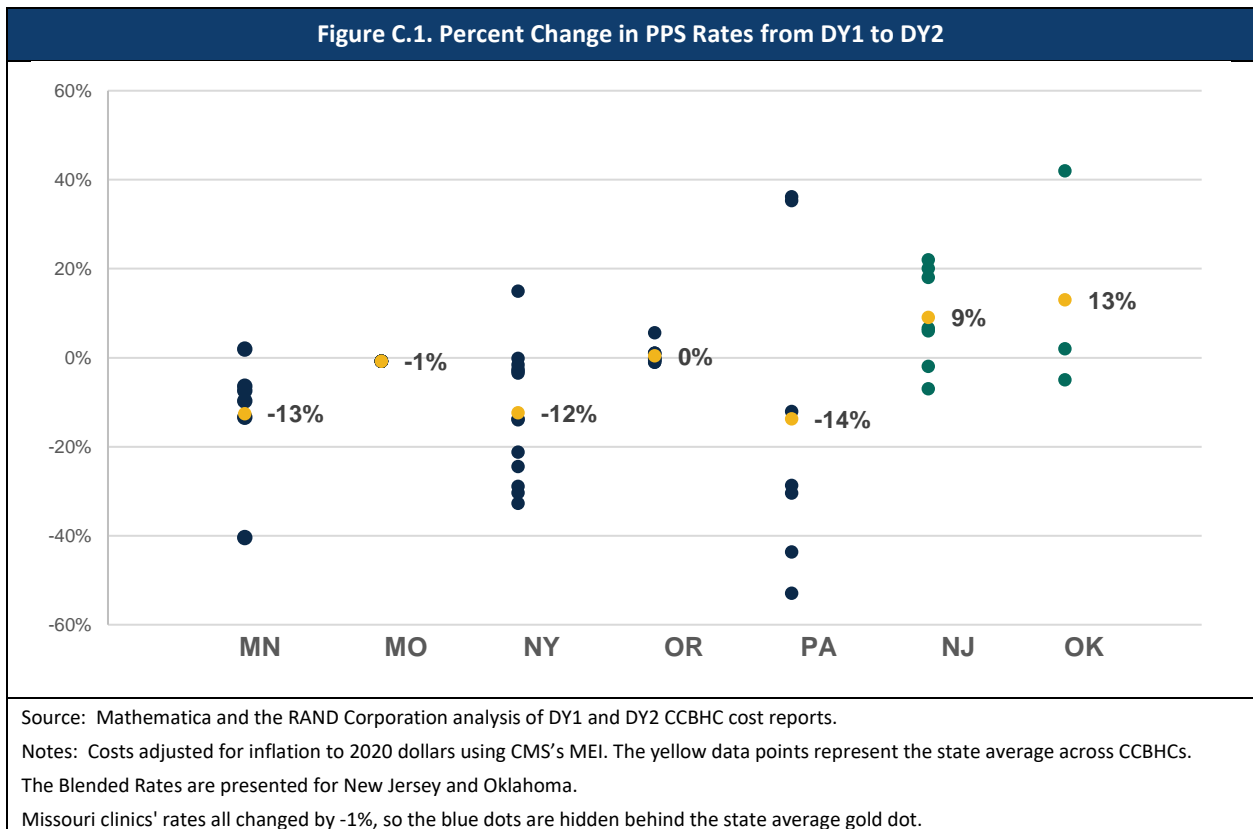
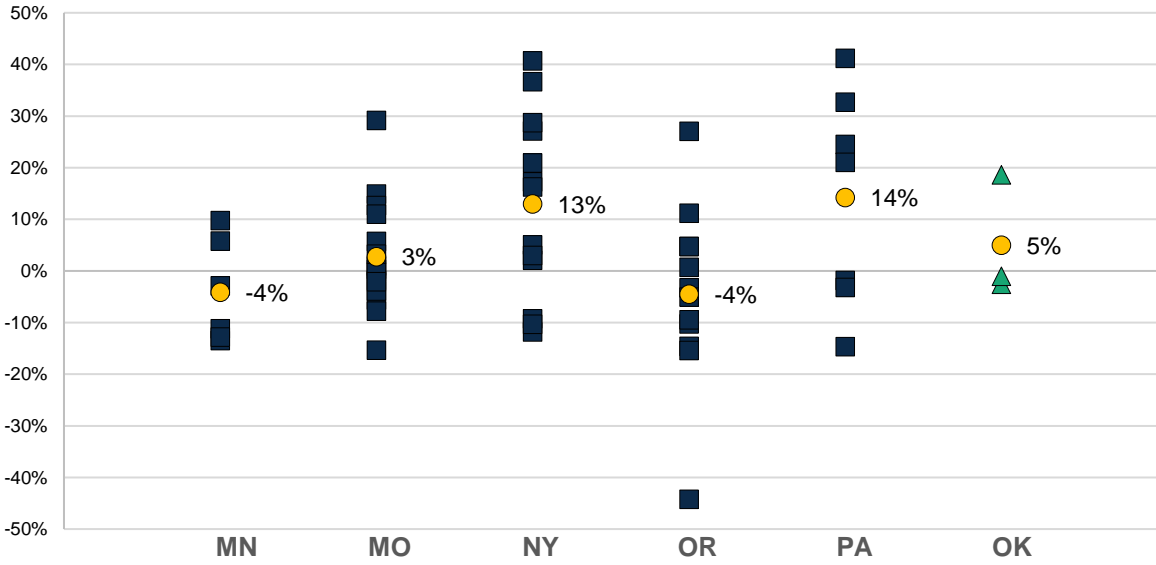


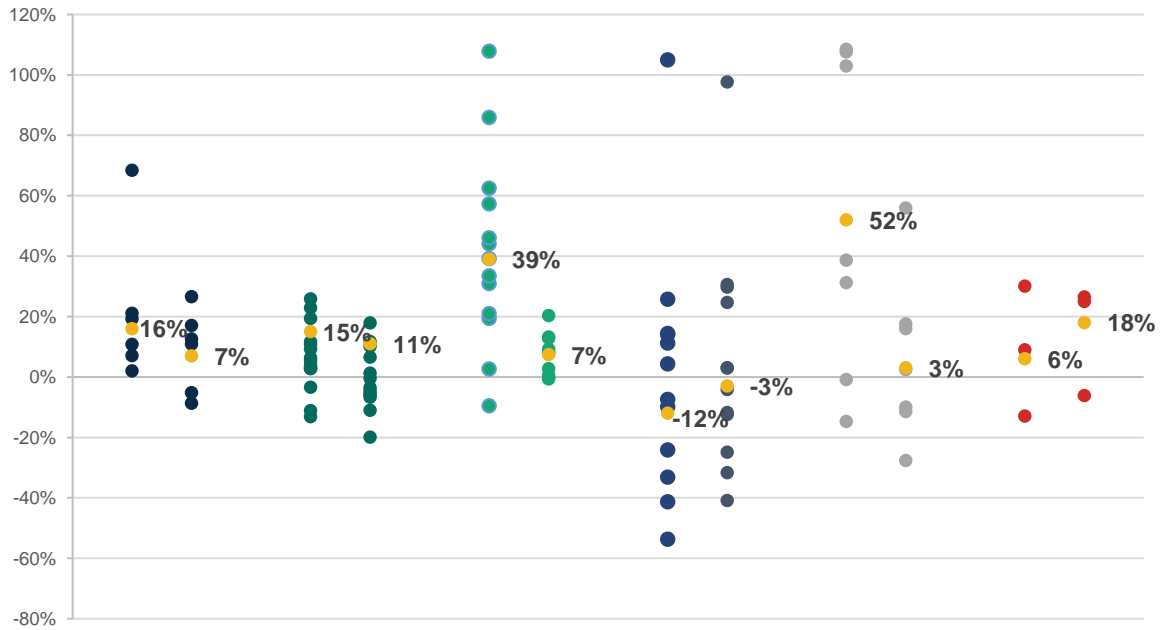
Figure C.2. Percent Change in Average Cost Per Visit-Day or Visit-Month from DY1 to DY2



Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 CCBHC cost reports.

Notes: Costs adjusted for inflation to 2020 dollars using CMS's MEI. The yellow data points represent the state average across CCBHCs.

Figure C.3. Percent that Rates were Higher or Lower than Costs per Visit-Day or Visit-Month in DY1 and DY2



Source: Mathematica and the RAND Corporation analysis of DY1 and DY2 CCBHC cost reports.

Notes: Costs adjusted for inflation to 2020 dollars using CMS's MEI. Each data point represents a CCBHC. The yellow data points represent the state average across CCBHCs.

APPENDIX D:
IMPACT STUDY METHODS AND FINDINGS

A. Identification of the Study Population

To create the study population, we followed a stepwise procedure to exclude beneficiaries from the final analytic sample:

1. Did not have a CCBHC or comparison clinic visit in the two-year baseline period. As expected, given that many CCBHC clinics expanded services and the populations they serve, many beneficiaries only received services from a CCBHC clinic during the demonstration period.
2. Died during the baseline period (these beneficiaries would have no demonstration period utilization).
3. Dually eligible for Medicaid and Medicare (because we did not link Medicaid and Medicare claims and therefore could not measure all service use for these beneficiaries).
4. Not eligible for full Medicaid benefits in the start month of the demonstration. We did this to ensure that we would observe all inpatient, outpatient, and ambulatory service use among the analytic population.
5. Less than six continuous months of full status Medicaid eligibility in the baseline period. This was to ensure that we could measure baseline service use in all three states and spending in Oklahoma.³³

Table D.1. Identification of the Study Population in Missouri, Oklahoma, and Pennsylvania

	Missouri		Oklahoma		Pennsylvania	
	Number of beneficiaries	Percent of remaining population dropped	Number of beneficiaries	Percent of remaining population dropped	Number of beneficiaries	Percent of remaining population dropped
All beneficiaries with a CCBHC or comparison clinics claim in baseline or demonstration periods	191,633	n/a	192,045	n/a	452,640	n/a
No CCBHC or comparison clinic claim in 1-year baseline period	149,730	78	89,184	46	156,306	35
Died in 1-year baseline period	0 ^a	0	536	1	2,986	1
Dual eligible	16,309	39	13,742	13	48,398	16
No full status Medicaid eligibility in start month of demonstration	1,631	6	49,591	56	56,171	23
No 6 continuous months Medicaid eligibility in baseline period	453	2	2,126	5	2,365	1
No 12 continuous months Medicaid eligibility in 1-year baseline period ^b	2,057	9	n/a	n/a	n/a	n/a
Final study population	21,453	n/a	36,866	n/a	186,414	n/a

Source: Mathematica analyses of Medicaid enrollment and claims data provided by the states of Missouri, Oklahoma and Pennsylvania.

- a. The Missouri Medicaid data was structured to include all beneficiaries who received services at CCBHCs/comparison facilities in the demonstration period; therefore, being alive at the start of the demonstration period was a requirement of the data pull. This was not the case in the other 2 states.
- b. We removed the 12-month continuous Medicaid eligibility in baseline requirement for Oklahoma and Pennsylvania because we found significant churn in those states and the requirement was excluding too many people. The requirement of full status Medicaid eligibility in the start month of the demonstration serves the same purpose.

³³ In Missouri, we also required 12 months continuous full status Medicaid eligibility during the demonstration, but we removed this continuous enrollment requirement for Oklahoma and Pennsylvania because we found significant churn in Medicaid eligibility in those states and the requirement excluded too many beneficiaries.

Table D.1 presents the number and percent of beneficiaries dropped with each of the restrictions/exclusions applied to define the study population in each state.

B. Measures

1. Claims-based measures

We calculated service use measures per 1,000 beneficiary years using state-provided Medicaid claims and encounters data (which included all CCBHC PPS claims). We calculated ambulatory and ED visit-days by deduplicating claims and encounters by visit type (ambulatory or ED visit, behavioral health or physical health) and service date, such that a beneficiary could only have one physical health-related ambulatory visit, one behavioral health-related ambulatory visit, one ED behavioral health-related visit, and/or one physical health-related ED visit per day. For inpatient stays, we combined initial claims and all interim claims representing the same stay into one stay. We defined an interim claim as having: (1) the same admission date as the initial claim; (2) an admission date that was equal to the discharge date from the initial claim; or (3) an admission date that occurred between the admission date and the discharge date of the initial claim or another interim claim. Additionally, ED visits that resulted in an inpatient stay were included in the inpatient stay; this was done by identifying any ED visit that had the same admission date as an inpatient claim. We identified visits and stays as behavioral health-related by looking at primary diagnosis codes on the underlying claims or encounters. Any claims or encounters that were not identified as behavioral health-related were assigned to physical health-related.

The service use measures are:

- Inpatient stays:
 - All-cause inpatient stays.
 - Behavioral health-related inpatient stays.
 - Physical health-related inpatient stays.
- ED visits:
 - All-cause ED visit-days.
 - Behavioral health-related ED visit-days.
 - Physical health-related ED visit-days.
- Ambulatory visits:
 - Total ambulatory visit-days.
 - CCBHC visit-days--for Missouri and Pennsylvania only (for Oklahoma we created a binary visit-month variable).
 - Comparison facility visit-days.
 - Other behavioral health-related ambulatory visit-days.
 - Other physical health-related ambulatory visit-days.

In addition to the continuous claims-based outcome measures listed above, we also created the following binary indicator variables to capture any service use during the baseline or intervention period:

- Any inpatient stay.

- Any ED visit.

2. Claims-based cost measures

We calculated cost measures for Oklahoma, as Oklahoma was the only state in this analysis where a large majority of beneficiaries and services were not covered under managed care. Any services covered under a managed care model (which in Oklahoma were only case management) were excluded from these cost measures. The cost measures are:

- Inpatient costs:
 - Total all-cause inpatient costs PBPM.
 - Total behavioral health-related inpatient costs PBPM.
 - Total physical health-related inpatient costs PBPM.
- ED visit costs:
 - Total all-cause ED visit costs PBPM.
 - Total behavioral health-related ED visit costs PBPM.
 - Total physical health-related ED visit costs PBPM.
- Ambulatory visit costs:
 - Total ambulatory visit costs PBPM.
 - Total CCBHC visit costs PBPM.
 - Total comparison clinic visit costs PBPM.

3. Variables used for propensity score matching and balance checks

In addition to the cost and service use measures discussed above, we created a range of other measures for use in propensity score adjustment or for checking balance between the final treatment and comparison groups. Table D.2 lists these variables and their specifications.

Table D.2. Variables included in Propensity Score Matching Models or for Post-Weighting (matching) Balance Checks			
Variable	Specification	Type	Use
Age	Variable indicating age on the first day of the demonstration period (varies by state), ^a calculated from beneficiary date of birth.	Continuous	Propensity score adjustment
Male	Variable indicating beneficiary's sex.	Binary	Propensity score adjustment
Race	Variable indicating beneficiary's race. Categories are: Black or African American, White, other race.	Categorical	Propensity score adjustment
Urbanicity	Variable capturing the level of urbanicity in the beneficiary's zip code of residence. Calculated using Area Health Resources File code. Categories are: Urban, Suburban, Rural.	Categorical	Propensity score adjustment
Eligibility	Variable indicating the type of Medicaid eligibility a beneficiary had in the start month of the demonstration. Categories are: child, adult non-disabled, adult disabled. ^b	Categorical	Propensity score adjustment

Table D.2. (continued)			
Variable	Specification	Type	Use
Managed care	Variable indicating enrollment in managed care at any time during the 2-year baseline period. Missouri and Oklahoma only.	Binary	Propensity score adjustment
BH MCO	Variable indicating the BH MCO in which a beneficiary was enrolled in the start month of the demonstration. Pennsylvania only.	Categorical	Propensity score adjustment
PH MCO	Variable indicating the PH MCO in which a beneficiary was enrolled in the start month of the demonstration. Pennsylvania only.	Categorical	Propensity score adjustment
Baseline months enrolled in BH MCO	Variable capturing the number of months a beneficiary was enrolled in a BH MCO during the 2-year baseline period. Pennsylvania only.	Continuous	Balance check
Demonstration months enrolled in BH MCO	Variable capturing the number of months a beneficiary was enrolled in a BH MCO during the 2-year demonstration period. Pennsylvania only.	Continuous	Balance check
Baseline months enrolled in PH MCO	Variable capturing the number of months a beneficiary was enrolled in a PH MCO during the 2-year baseline period. Pennsylvania only.	Continuous	Balance check
Demonstration months enrolled in PH MCO	Variable capturing the number of months a beneficiary was enrolled in a PH MCO during the 2-year demonstration period. Pennsylvania only.	Continuous	Balance check
CPR or CSTAR status	Variable indicating enrollment in the CPR or CSTAR programs at any point during the 2-year baseline period. Missouri only.	Binary	Propensity score adjustment
Baseline months with full-status Medicaid eligibility	Variable capturing the number of months a beneficiary was enrolled in full-status Medicaid during the 2-year baseline period.	Continuous	Propensity score adjustment
Demonstration months with full-status Medicaid eligibility	Variable capturing the number of months a beneficiary was enrolled in full-status Medicaid during the 2-year demonstration period.	Continuous	Balance check
Baseline CCBHC and comparison facility services	Variable indicating whether a beneficiary received services at both a CCBHC and a comparison facility during the 2-year baseline period.	Binary	Balance check
Demonstration CCBHC and comparison facility services	Variable indicating whether a beneficiary received services at both a CCBHC and a comparison facility during the 2-year demonstration period (a small proportion).	Binary	Balance check
Period	Variable indicating the most recent 6-month period that a beneficiary had a CCBHC or comparison facility visit in the baseline period.	Categorical	Propensity score adjustment
CDPS score	Variable capturing expected risk level (and by proxy beneficiary illness level). ^c	Continuous	Propensity score adjustment
Anxiety disorders	Variable indicating whether a beneficiary had an anxiety disorder in the 2-year baseline period. Calculated using the CCW algorithm based on diagnosis codes.	Binary	Propensity score adjustment
Bipolar disorder	Variable indicating whether a beneficiary had a bipolar disorder in the 2-year baseline period. Calculated using the CCW algorithm based on diagnosis codes.	Binary	Propensity score adjustment
Depressive disorders	Variable indicating whether a beneficiary had a depressive disorder in the 2-year baseline period. Calculated using the CCW algorithm based on diagnosis codes.	Binary	Propensity score adjustment

Table D.2. (continued)			
Variable	Specification	Type	Use
Schizophrenia and other psychotic disorders	Variable indicating whether a beneficiary had schizophrenia or other psychotic disorder in the 2-year baseline period. Calculated using the CCW algorithm based on diagnosis codes.	Binary	Propensity score adjustment
Alcohol use disorders	Variable indicating whether a beneficiary had an alcohol use disorder in the 2-year baseline period. Calculated using the CCW algorithm based on diagnosis codes.	Binary	Propensity score adjustment
Drug use disorders	Variable indicating whether a beneficiary had a drug use disorder in the 2-year baseline period. Calculated using the CCW algorithm based on diagnosis codes.	Binary	Propensity score adjustment
Opioid use disorders	Variable indicating whether a beneficiary had an opioid use disorder in the 2-year baseline period. Calculated using the CCW algorithm based on diagnosis codes.	Binary	Propensity score adjustment
Asthma	Variable indicating whether a beneficiary had asthma in the 2-year baseline period. Calculated using the CCW algorithm based on diagnosis codes.	Binary	Propensity score adjustment
Diabetes	Variable indicating whether a beneficiary had diabetes in the 2-year baseline period. Calculated using the CCW algorithm based on diagnosis codes.	Binary	Propensity score adjustment
COPD	Variable indicating whether a beneficiary had COPD in the 2-year baseline period. Calculated using the CCW algorithm based on diagnosis codes.	Binary	Propensity score adjustment
Heart disease	Variable indicating whether a beneficiary had ischemic heart disease, acute myocardial infarction, or heart failure in the 2-year baseline period. Calculated using the CCW algorithms based on diagnosis codes.	Binary	Propensity score adjustment
Hypertension	Variable indicating whether a beneficiary had hypertension in the 2-year baseline period. Calculated using the CCW algorithms based on diagnosis codes.	Binary	Propensity score adjustment
Hyperlipidemia	Variable indicating whether a beneficiary had hyperlipidemia in the 2-year baseline period. Calculated using the CCW algorithms based on diagnosis codes.	Binary	Propensity score adjustment
Obesity	Variable indicating whether a beneficiary was obese in the 2-year baseline period. Calculated using the CCW algorithms based on diagnosis codes.	Binary	Propensity score adjustment
Mental health conditions	Variable indicating the presence of 1 or more of the following conditions (as described above) in the 2-year baseline period: anxiety disorders, bipolar disorder, depressive disorders, schizophrenia and other psychotic disorders.	Binary	Propensity score adjustment
SUDs	Variable indicating the presence of 1 or more of the following disorders (as described above) during the 2-year baseline period: alcohol use disorders, drug use disorders, opioid use disorders.	Binary	Propensity score adjustment
BH conditions	Variable indicating the presence of 1 or more mental health conditions or SUDs (as described above) during the 2-year baseline period.	Binary	Propensity score adjustment

Table D.2. (continued)			
Variable	Specification	Type	Use
PH Conditions	Variable indicating the presence of 1 or more of the following conditions (as described above) during the 2-year baseline period: asthma, COPD, heart disease, hypertension, hyperlipidemia, obesity.	Binary	Propensity score adjustment

a. The Oklahoma demonstration started on April 1, 2017. The Missouri and Pennsylvania demonstrations started on July 1, 2017.

b. Where eligibility codes did not provide adequate information, we supplemented with calculated age using date of birth from eligibility data (Oklahoma, Pennsylvania), claims-based aid type codes (Oklahoma), and/or state-provided disability data (Pennsylvania).

c. The CDPS was developed by researchers at the University of California, San Diego to adjust Medicaid payments to MCOs. A higher CDPS score signifies a higher expected risk profile and higher expected costs to Medicaid, whereas a lower CDPS score signifies a lower expected risk and lower expected costs (Kronick et al. 2000). The scores are normalized so that the average costs in each population is one. A score above 1 indicates higher than average expected costs, and a score below one indicates lower than average costs.

C. Propensity Score Methods for Weighting and Matching

We used statistical methods to construct a comparison group to serve as the counterfactual for the impact analysis for all three states. Propensity score weighting was the approach used for Missouri and Oklahoma due to the relatively small size of the comparison groups. In contrast, we used propensity score matching for Pennsylvania where we had a very large comparison pool relative to the treatment group and where we also wanted to exact match on managed care plan enrollment. In Pennsylvania, managed care coverage is regional (i.e., plans cover only certain parts of the state), and it was imperative to ensure that the comparison group beneficiaries were drawn from the same regions as the treatment beneficiaries. We accomplished this by using an optimal matching algorithm to form matched sets of treatment and comparison beneficiaries and restricting possible matches to treatment-comparison pairs with enrollment in the same physical and behavioral health managed care plans. This technique guaranteed that the weighted distribution of beneficiaries across all combinations of physical and behavioral health managed care plans were identical in the treatment and comparison groups after matching (these are weighted because we allowed up to five comparison beneficiaries to match to each treatment beneficiary, as described below).

For both propensity score techniques, we first fit logistic regression models of baseline beneficiary characteristics (as listed in Table D.2) to estimate the probability (or propensity score) that a beneficiary was in the treatment group. For the most part, the same set of covariates were used across the states, except that in Oklahoma, baseline total costs was also included in the propensity score model.

1. Propensity score weighting

In Missouri and Oklahoma, the propensity scores from the models were used to create matching weights (i.e., inverse probability weights) to estimate the average treatment effects on the treated, as follows:

$$(1) \quad w_i = 1 \text{ if } Z_i = 1 \\ = \begin{cases} \hat{p}_i & \text{if } Z_i = 1 \\ 1 - \hat{p}_i & \text{if } Z_i = 0 \end{cases}$$

In Equation (1), w_i is the matching weight assigned to beneficiary i , \hat{p}_i is that beneficiary's estimated propensity score, and Z_i is the treatment group indicator, with $Z_i = 1$ for beneficiaries receiving services from CCBHCs and $Z_i = 0$ for beneficiaries receiving services from comparison clinics. The weights were normalized so that the sum of the comparison weights equaled the number of comparisons in the sample. If any of the normalized weights were below 0.10 or above 10 then the weights were winsorized to those limits and renormalized in an iterative fashion. The winsorization of the weights reduces the variability of the weights and prevents a small number of comparisons from having a large percentage of the matching weight in the sample (Lee, Lessler, and Stuart 2011; Shadish and Steiner 2010). When reducing the variability of the weights the precision of the impact estimates is improved, but there is a tradeoff where the covariate balance can worsen. The range used for winsorizing was somewhat arbitrary and could have been adjusted if necessary. In both states however, the resulting balance post matching was very good and the variability in the weights was relatively low.

Prior to matching, Missouri exhibited good balance on baseline covariates and outcomes (Table D.3), though many were outside of the 0.10 standardized difference target (this can occur because the standard deviation used to calculate the standardized differences is tight). In Oklahoma, prior to matching, the baseline covariates appeared relatively well-balanced, however some outcome variables such as total number of ED visit-days and any ED visit-days, total ambulatory visit-days, and total CCBHC and comparison facility visit-days appeared noticeably imbalanced (Table D.4).

In Missouri, after weighting, the overall balance was improved and was considered to be very good (standardized differences less than 0.10) across all variables (Table D.3) and baseline trends in key outcomes over the two years prior to the demonstration start were mostly parallel. Oklahoma was trickier. After our initial weighting attempt, the treatment and comparison groups had improved balance across several service use and cost outcomes (Table D.4), but we observed some regression to the mean in some key outcomes over the baseline and intervention periods. To address the possibility that a few outliers with catastrophic health care needs in the baseline period might be driving these patterns, we trimmed the top 0.2 percent of the beneficiaries within the treatment group and comparison groups in terms of total costs at baseline before re-running the matching algorithm. We attempted multiple specifications of the propensity score model in Oklahoma to obtain good balance in baseline means for all covariates and outcomes as well as parallel trends for key outcomes over the baseline period with no regression to the mean during the intervention period, but found it was hard to satisfy both conditions. We selected the model specification that provided parallel trends with no regression to the mean.

2. Propensity score matching

For Pennsylvania, propensity score matching was used to ensure that only beneficiaries enrolled in the same managed care plans (both physical and behavioral health plans) could be matched. In Pennsylvania, managed care plans operate in select regions and thus it was important to use this technique to guarantee that the weighted distribution of beneficiaries across managed care plans was identical in the treatment and comparison groups. The first step in propensity score matching was the same as propensity score weighting--fit the logistic regression model to estimate propensity scores. Next, we used an optimal matching algorithm to form matched sets of treatment and comparison beneficiaries. Optimal matching selects matches to minimize the sum of the differences in propensity scores between the treatments and their matched comparisons across the entire sample. For Pennsylvania specifically, within the matched sets, a treatment could match to between one and five comparisons (i.e., variable-ratio matching). A

single comparison could also be matched to between one and five treatments (i.e., matching with replacement). Thus, the possible ratio of comparisons to treatments allowed in the matched sets ranged from 1:5 to 5:1. Additionally, the possible matches were restricted to only where a treatment and potential matched comparison had the same physical and behavioral health managed care plans (i.e., “exact match” criteria).

In cases where the observed strata formed by the combination of the behavioral health and physical health managed care plans did not contain any treatment or comparison beneficiaries, all beneficiaries in that strata were dropped from the matching pool (1/490 or 0.20 percent of treatment beneficiaries and 28,165/179,793 or 16 percent of comparisons were dropped). After these exclusions, there were 158 exact match strata remaining in the data. Within these, 145 of them (representing over 85 percent of the treatment beneficiaries) had a ratio of potential comparison beneficiaries to treatment beneficiaries above two, indicating that matching was feasible despite the large number of exact match strata. Typically, as the number of exact match strata increases, the number of comparisons available to match on within the strata is reduced to a point where matching becomes futile. In the case of Pennsylvania, the comparison pool was nearly 23 times larger than the treatment group which allowed for the large number of exact match strata.

After the matched sets were identified, matching weights were calculated. All treatment beneficiaries received a weight of 1, whereas comparison beneficiaries received a weight equal to n_j^T/n_j^C , where n_j^T and n_j^C are the number of treatment and comparison beneficiaries in matched set j , respectively. For example, if in a matched set there were three comparisons matched to one treatment, then the comparisons in that matched set would each receive a weight of 1/3.

In general, Pennsylvania exhibited poor balance prior to matching particularly regarding the distribution of observed physical health and behavioral health MCOs. After matching, the balance improved for nearly all considered variables with the standardized differences across all variables falling within the 0.10 target (Table D.5), and baseline trends looked mostly parallel with little to no evidence of regression to the mean.

3. Assessing the quality of the weighted or matched samples

We assessed the distribution of matching variables and baseline outcomes between the treatment and weighted or matched comparison groups. Generally, we considered the groups to exhibit good covariate balance and the match is typically considered acceptable when the samples met the following diagnostic criteria:

1. **Standardized differences in means.** The evaluation defined the standardized difference as the treatment-comparison difference between the mean values of a covariate, expressed in standard-deviation units. Smaller standardized differences indicate more closely matched groups. A commonly invoked benchmark (Rubin 2001) suggests that groups are well matched if standardized differences for all covariates are less than 0.25. However, the evaluation strove for differences no larger than 0.10.
2. **Percentage difference in means.** Even when the standardized difference is less than 0.10, the percentage difference in means can be quite large, especially for variables with a high variance, such as the baseline number of hospitalizations. For example, a standardized difference of 0.10 for a variable with a coefficient of variation of 2.0, the absolute difference in means would be 20 percent of the mean. A difference this large in baseline means would cause concerns about the assumption that

the study drew treatment and comparison groups from the same population and would have similar outcome trajectories in the absence of the intervention. Thus, the study team also examined the absolute difference in means and modified the matching approach where appropriate to keep the percentage difference in means on key characteristics, below 10 percent whenever possible.

3. **Equivalence tests.** An equivalence test expresses the null hypothesis that the absolute value of the difference between two means is greater than a specified amount. For these tests, we specified a difference in covariate means of at least 0.25 standard deviations. Rejecting the null hypothesis, implying that the difference in means is less than 0.25 standard deviations, suggests an adequate match.
4. **T-test for difference in means.** We also conducted a standard t-test for differences in the mean value of each covariate. Unlike the previously described criteria, the t-test is not typically recommended as a test for the quality of a match because samples that are large enough will often lead to rejection of the null hypothesis. For some variables, the differences are statistically significant but operationally insignificant; the equivalence test described earlier assesses the latter, more relevant, criterion. Even more concerning, when samples are small, the test can fail to reject the hypothesis of equal means for the two groups even when the differences are large because the power of the test is low. We included this test because it could signal issues with the match that deserve further investigation. Note that the t-test and the equivalence test can both reject the null hypothesis (that is, the means are not equal for the two groups, but the difference does not exceed 0.25 standard deviations), especially when samples are large.
5. **Trend plots.** Because a difference-in-differences analysis assumes parallel trends, pre-post matching trends in the outcomes of the treatment and comparison groups were assessed visually using line plots. We examined the plots to assess regression to the mean.

4. Balance tables

This section summarizes the differences between the treatment and comparison groups in each state prior to propensity score adjustment, and the composition of the groups post-adjustment including how the differences were resolved.

Missouri. Prior to propensity score weighting, the Missouri treatment and comparison groups differed across a range of characteristics at baseline. The Missouri treatment group was younger (mean age 30.5 compared to 32.7), had a higher proportion of White race (79 percent compared to 74 percent), was less urban (5 percent compared to 12 percent) and rural (14 percent compared to 19 percent) and more suburban (81 percent compared to 70 percent), and had a lower proportion of beneficiaries with a disability (55 percent compared to 62 percent). A lower proportion of the treatment group had one of the physical health chronic conditions we flagged (47 percent compared to 52 percent), most notably hypertension (25 percent compared to 30 percent). Fewer treatment group members suffered from schizophrenia and other related psychotic disorders (21 percent compared to 27 percent), while more experienced anxiety (57 percent compared to 53 percent). Generally, the treatment group was slightly less sick than the comparison group as measured by CDPS score (2.5 compared to 2.8), although both groups' scores indicate a sick population. A greater proportion of the treatment group was ever in managed care (45 percent compared to 39 percent). Finally, the treatment and comparison groups also differed on many measures of service use at baseline. The treatment group had 8 percent fewer all-cause inpatient stays, 8 percent fewer all-cause ED visit-days, and 11 percent fewer ambulatory visit-days, although the treatment

group's CCBHC and comparison facility service use at baseline was 41 percent higher than that of the comparison group.

After propensity score weighting, all weighting variables were within 0.1 standardized differences indicating excellent matching (Table D.3). All differences between the treatment and comparison groups prior to weighting were resolved. The final beneficiary counts were 18,545 treatment and 2,891 comparison, for a treatment: comparison ratio of 6.4:1.

Table D.3. Baseline Characteristics of Treatment Group and Matched Comparison Group Beneficiaries for Missouri

	Treatment group mean (SE)	Weighted comparison group mean (SE)	Adjusted difference (SE)	Percentage difference	Standardized difference	t-test p-value	Equivalence p-value
Demographics (during start month of demonstration)							
Age	30 (0.13)	30 (0.33)	0.34 (0.35)	1.1	0.02	0.34	<0.01
Male, %	46 (0.37)	45 (0.93)	0.46 (0.97)	<+/-1	0.01	0.64	<0.01
Race - White, %	79 (0.30)	82 (0.82)	-2.6 (0.75)	-3.3	-0.06	< 0.01	<0.01
Race - Black, %	17 (0.28)	15 (0.78)	2.1 (0.69)	13	0.06	< 0.01	<0.01
Race - other, %	3.9 (0.14)	3.4 (0.34)	0.43 (0.36)	11	0.02	0.23	<0.01
Urban, %	5.2 (0.16)	4.7 (0.60)	0.55 (0.44)	11	0.02	0.21	<0.01
Suburban, %	81 (0.29)	81 (0.86)	0.15 (0.82)	<+/-1	0.00	0.85	<0.01
Rural, %	14 (0.25)	15 (0.73)	-0.70 (0.73)	-5.0	-0.02	0.34	<0.01
Eligibility and enrollment							
Number of months of full scope Medicaid eligibility in baseline	23 (0.03)	23 (0.07)	0.07 (0.07)	<+/-1	0.02	0.32	<0.01
Medicaid eligibility category is adult in start month of demonstration, %	7.1 (0.19)	7.1 (0.41)	0.07 (0.52)	<+/-1	0.00	0.90	<0.01
Medicaid eligibility category is child in start month of demonstration, %	38 (0.36)	38 (0.87)	-0.01 (0.95)	<+/-1	0.00	0.99	<0.01
Medicaid eligibility category is disabled in start month of demonstration, %	55 (0.37)	55 (0.90)	-0.06 (0.98)	<+/-1	0.00	0.95	<0.01
Ever enrolled in managed care in baseline, %	45 (0.37)	46 (0.91)	-0.44 (1.00)	<+/-1	-0.01	0.66	<0.01
Ever enrolled in CPR or CSTAR programs in baseline (Missouri only), %	62 (0.36)	61 (0.91)	1.3 (0.97)	2.2	0.03	0.16	<0.01
Most recent CCBHC/CMHC visit during the baseline was in the first 6 months of baseline, %	6.1 (0.18)	6.2 (0.45)	-0.19 (0.50)	-3.1	-0.01	0.70	<0.01

Table D.3. (continued)

	Treatment group mean (SE)	Weighted comparison group mean (SE)	Adjusted difference (SE)	Percentage difference	Standardized difference	t-test p-value	Equivalence p-value
Most recent CCBHC/CMHC visit during the baseline was in the second 6 months of baseline, %	8.3 (0.20)	8.0 (0.51)	0.25 (0.54)	3.0	0.01	0.65	<0.01
Most recent CCBHC/CMHC visit during the baseline was in the third 6 months of baseline, %	12 (0.24)	12 (0.76)	0.62 (0.67)	5.0	0.02	0.36	<0.01
Most recent CCBHC/CMHC visit during the baseline was in the fourth 6 months of baseline, %	73 (0.33)	74 (0.89)	-0.68 (0.89)	<+/-1	-0.02	0.45	<0.01
Health status and diagnosis (during two-year baseline period)							
CDPS score in baseline ^a (mean)	2.5 (0.01)	2.5 (0.04)	0.01 (0.03)	<+/-1	0.00	0.81	<0.01
Any behavioral health condition	84 (0.27)	85 (0.64)	-1.1 (0.73)	-1.3	-0.03	0.14	<0.01
Any mental health condition	83 (0.28)	84 (0.65)	-1.5 (0.75)	-1.8	-0.04	0.04	<0.01
Anxiety	57 (0.36)	56 (0.93)	0.84 (1.00)	1.5	0.02	0.40	<0.01
Bipolar	42 (0.36)	41 (0.92)	0.32 (1.0)	<+/-1	0.01	0.75	<0.01
Depressive disorders	49 (0.37)	48 (0.93)	1.2 (1.0)	2.4	0.02	0.24	<0.01
Schizophrenia and other psychotic disorders	21 (0.30)	21 (0.83)	0.71 (0.80)	3.3	0.02	0.38	<0.01
Any SUD	22 (0.30)	21 (0.79)	1.2 (0.81)	5.5	0.03	0.14	<0.01
Alcohol use	9.1 (0.21)	8.8 (0.56)	0.25 (0.57)	2.8	0.01	0.66	<0.01
Drug use	18 (0.28)	17 (0.74)	0.65 (0.76)	3.6	0.02	0.39	<0.01
Opioid use	5.1 (0.16)	5.3 (0.38)	-0.19 (0.44)	-3.7	-0.01	0.67	<0.01

Table D.3. (continued)

	Treatment group mean (SE)	Weighted comparison group mean (SE)	Adjusted difference (SE)	Percentage difference	Standardized difference	t-test p-value	Equivalence p-value
Any physical health condition	47 (0.37)	47 (0.93)	0.37 (1.0)	<+/-1	0.01	0.71	<0.01
Asthma	13 (0.25)	13 (0.64)	0.29 (0.66)	2.2	0.01	0.66	<0.01
COPD	14 (0.26)	14 (0.68)	0.21 (0.70)	1.5	0.01	0.77	<0.01
Heart disease	5.8 (0.17)	5.7 (0.49)	0.06 (0.45)	<+/-1	0.00	0.90	<0.01
Hyperlipidemia	13 (0.25)	13 (0.66)	0.35 (0.70)	2.6	0.01	0.61	<0.01
Hypertension	25 (0.32)	24 (0.85)	0.89 (0.83)	3.6	0.02	0.29	<0.01
Obesity	11 (0.23)	11 (0.63)	0.38 (0.64)	3.4	0.01	0.55	<0.01
Diabetes	13 (0.25)	12 (0.67)	0.76 (0.66)	5.9	0.02	0.25	<0.01
Service use (during 2-year baseline period)							
Total ambulatory visit-days per 1,000 beneficiary years	59,530 (568)	58,773 (1,532)	757 (1,396)	1.3	0.01	0.59	<0.01
Number of CCBHC and comparison facility visit-days per 1,000 beneficiary years	6,887 (91)	5,844 (94)	1,043 (150)	15	0.08	< 0.01	<0.01
Number of BH ambulatory visit-days, excluding CCBHC and comparison facility, per 1,000 beneficiary years	29,433 (403)	30,298 (1,073)	-865 (1,009)	-2.9	-0.02	0.39	<0.01
Number of PH ambulatory visit-days, excluding CCBHC and comparison facility, per 1,000 beneficiary years	23,210 (385)	22,631 (1,072)	579 (957)	2.5	0.01	0.54	<0.01
Total inpatient stays, per 1,000 beneficiary years	526 (8.1)	542 (24)	-16 (24)	-3.0	-0.01	0.51	<0.01
Number of BH inpatient stays, per 1,000 beneficiary years	327 (6.4)	342 (15)	-16 (18)	-4.8	-0.02	0.39	<0.01
Number of PH inpatient stays, per 1,000 beneficiary years	199 (4.6)	199 (16)	-0.24 (14)	<+/-1	0.00	0.99	<0.01
Total ED visit-days, per 1,000 beneficiary years	2,013 (27)	2,065 (88)	-52 (84)	-2.6	-0.01	0.53	<0.01

Table D.3. (continued)							
	Treatment group mean (SE)	Weighted comparison group mean (SE)	Adjusted difference (SE)	Percentage difference	Standardized difference	t-test p-value	Equivalence p-value
Number of BH ED visit-days, per 1,000 beneficiary years	295 (7.5)	312 (23)	-17 (23)	-5.7	-0.02	0.46	<0.01
Number of PH ED visit-days, per 1,000 beneficiary years	1,718 (23)	1,753 (76)	-35 (74)	-2.1	-0.01	0.63	<0.01
Any inpatient stays, %	39 (0.36)	38 (0.91)	1.9 (0.96)	4.7	0.04	0.05	<0.01
Any ED visit-days, %	72 (0.33)	69 (0.85)	2.6 (0.92)	3.6	0.06	<0.01	<0.01
Propensity score	0.87 (0.00)	0.87 (0.00)	0.00 (0.00)	<+/-1	0.01	0.78	<0.01
Number of beneficiaries	18,545	2,891					

Source: Mathematica analyses of Medicaid enrollment, claims, and demographic data provided by the state of Missouri.

Note: Standard errors in parentheses. Standardized difference calculated as the ratio of the treatment-comparison difference and the treatment group standard deviation. p-values come from a weighted 2-sample t-test; equivalence test p-values are the greater of the p-values for the 2 1-sided weighted t-tests of whether the true treatment-comparison difference exceeded 0.25 standard deviations of the variable. The comparison group means in the table are calculated by weighting observations by the matching weight. Unlike the weight used in the model results tables in the body of the report and Table D.6-D.8, the matching weight does not account for the number of months a beneficiary was eligible for full-status Medicaid.

- a. The CDPS was developed by researchers at the University of California, San Diego to adjust Medicaid payments to MCOs. A higher CDPS score signifies a higher expected risk profile and higher expected spending, whereas a lower CDPS score signifies a lower expected risk and lower expected spending (Kronick et al. 2000). The scores are normalized so that the average spending in each population is 1. A score above 1 indicates higher than average expected spending, and a score below one indicates lower than average spending.

Oklahoma. The Oklahoma treatment and comparison groups were well-balanced on most non-utilization variables even prior to matching, with a few exceptions. The treatment group was less suburban (76 compared to 82 percent) and more rural (18 percent compared to 13 percent) than the comparison group. A higher proportion of the treatment group had at least one of the behavioral health conditions included in our behavioral health grouper variable during the baseline period (83 percent compared to 75 percent), driven by a higher rate of depressive disorders (52 compared to 44 percent).³⁴ Finally, the treatment and comparison groups differed on most measures of service use at baseline. The treatment group had seven percent more all-cause inpatient stays, 17 percent more all-cause ED visit-days, and 24 percent more ambulatory visit-months, driven in part by the treatment group's 50 percent higher CCBHC and comparison facility visit-months at baseline. FFS costs for all-cause inpatient stays were lower for the treatment group than the comparison group by 18 percent, but FFS costs were higher for the treatment group for all-cause ED visit-days by 11 percent, and for ambulatory visit-months by 15 percent.

After propensity score weighting, all weighting variables were within 0.1 standardized differences indicating excellent matching (Table D.4). All differences between the treatment and comparison groups prior to matching were resolved. The final beneficiary counts were 10,839 treatment and 25,836 comparison, for a treatment: comparison ratio of 1:2.4.

³⁴ We created a variable that indicated if a beneficiary had any of the following diagnoses: anxiety, bipolar disorder, depressive disorders, schizophrenia and other psychotic disorders, alcohol use disorder, drug use disorder, and opioid use disorder.

Table D.4. Baseline Characteristics of Treatment and Matched Comparisons Beneficiaries for Oklahoma

	Treatment group mean (SE)	Weighted comparison group mean (SE)	Adjusted difference (SE)	Percentage difference	Standardized difference	t-test p-value	Equivalence p-value
Demographics (during start month of demonstration)							
Age	24 (0.15)	24 (0.10)	-0.60 (0.18)	-2.5	-0.04	<0.01	<0.01
Male, %	42 (0.47)	41 (0.31)	0.48 (0.58)	1.2	0.01	0.40	<0.01
Race - White, %	63 (0.46)	63 (0.30)	-0.06 (0.54)	<+/-1	0.00	0.92	<0.01
Race - Black, %	12 (0.31)	12 (0.21)	-0.43 (0.37)	-3.6	-0.01	0.25	<0.01
Race - other, %	25 (0.42)	24 (0.27)	0.49 (0.47)	1.9	0.01	0.30	<0.01
Urban, %	6.1 (0.23)	6.4 (0.13)	-0.29 (0.27)	-4.7	-0.01	0.29	<0.01
Suburban, %	76 (0.41)	77 (0.24)	-0.47 (0.49)	<+/-1	-0.01	0.34	<0.01
Rural, %	18 (0.37)	17 (0.21)	0.76 (0.44)	4.2	0.02	0.08	<0.01
Eligibility and enrollment							
Number of months of full scope Medicaid eligibility in baseline	21 (0.04)	21 (0.03)	0.06 (0.05)	<+/-1	0.01	0.30	<0.01
Medicaid eligibility category is adult in start month of demonstration, %	24 (0.41)	25 (0.27)	-0.67 (0.51)	-2.8	-0.02	0.19	<0.01
Medicaid eligibility category is child in start month of demonstration, %	55 (0.48)	53 (0.31)	1.9 (0.57)	3.4	0.04	<0.01	<0.01
Medicaid eligibility category is disabled in start month of demonstration, %	21 (0.39)	23 (0.25)	-1.2 (0.48)	-5.6	-0.03	0.01	<0.01
Ever enrolled in managed care in baseline, %	70 (0.44)	69 (0.29)	0.44 (0.50)	<+/-1	0.01	0.38	<0.01
Most recent CCBHC/CMHC visit during the baseline was in the first 6 months of baseline, %	10 (0.29)	10 (0.20)	-0.04 (0.34)	<+/-1	0.00	0.91	<0.01
Most recent CCBHC/CMHC visit during the baseline was in the second 6 months of baseline, %	11 (0.31)	11 (0.20)	0.01 (0.37)	<+/-1	0.00	0.97	<0.01

Table D.4. (continued)

	Treatment group mean (SE)	Weighted comparison group mean (SE)	Adjusted difference (SE)	Percentage difference	Standardized difference	t-test p-value	Equivalence p-value
Most recent CCBHC/CMHC visit during the baseline was in the third 6 months of baseline, %	16 (0.36)	16 (0.23)	0.09 (0.43)	<+/-1	0.00	0.83	<0.01
Most recent CCBHC/CMHC visit during the baseline was in the fourth 6 months of baseline, %	62 (0.47)	62 (0.31)	-0.06 (0.56)	<+/-1	0.00	0.91	<0.01
Health status and diagnosis (during 2-year baseline period)							
CDPS score in baseline ^a (mean)	2.0 (0.01)	2.1 (0.01)	-0.02 (0.02)	-1.1	-0.01	0.24	<0.01
Any behavioral health condition	83 (0.36)	76 (0.27)	7.1 (0.44)	8.5	0.19	<0.01	<0.01
Any mental health condition	80 (0.38)	74 (0.28)	6.4 (0.48)	8.0	0.16	<0.01	<0.01
Anxiety	50 (0.48)	49 (0.31)	0.17 (0.59)	<+/-1	0.00	0.77	<0.01
Bipolar	26 (0.42)	27 (0.28)	-0.47 (0.51)	-1.8	-0.01	0.36	<0.01
Depressive disorders	51 (0.48)	44 (0.31)	7.4 (0.55)	14	0.15	<0.01	<0.01
Schizophrenia and other psychotic disorders	18 (0.37)	17 (0.22)	1.4 (0.46)	7.7	0.04	<0.01	<0.01
Any SUD	26 (0.42)	23 (0.25)	2.6 (0.48)	10	0.06	<0.01	<0.01
Alcohol use	5.4 (0.22)	5.7 (0.15)	-0.31 (0.26)	-5.8	-0.01	0.23	<0.01
Drug use	23 (0.41)	21 (0.24)	2.6 (0.47)	11	0.06	<0.01	<0.01
Opioid use	5.4 (0.22)	5.6 (0.14)	-0.24 (0.26)	-4.5	-0.01	0.35	<0.01

Table D.4. (continued)

	Treatment group mean (SE)	Weighted comparison group mean (SE)	Adjusted difference (SE)	Percentage difference	Standardized difference	t-test p-value	Equivalence p-value
Any physical health condition	32 (0.45)	33 (0.29)	-0.53 (0.53)	-1.7	-0.01	0.32	<0.01
Asthma	13 (0.32)	13 (0.21)	-0.03 (0.39)	<+/-1	0.00	0.93	<0.01
COPD	6.9 (0.24)	7.0 (0.16)	-0.11 (0.29)	-1.6	0.00	0.71	<0.01
Heart disease	3.7 (0.18)	3.8 (0.12)	-0.13 (0.22)	-3.5	-0.01	0.56	<0.01
Hyperlipidemia	7.9 (0.26)	7.9 (0.16)	0.01 (0.32)	<+/-1	0.00	0.98	<0.01
Hypertension	14 (0.34)	15 (0.22)	-0.41 (0.39)	-2.8	-0.01	0.30	<0.01
Obesity	9.0 (0.28)	9.0 (0.19)	0.04 (0.32)	<+/-1	0.00	0.90	<0.01
Diabetes	6.3 (0.23)	6.5 (0.15)	-0.21 (0.28)	-3.4	-0.01	0.44	<0.01
Service use (during 2-year baseline period)							
Total ambulatory visit-days per 1,000 beneficiary years	37,847 (399)	37,432 (206)	415 (492)	1.1	0.01	0.40	<0.01
Months with at least 1 ambulatory visit-day, per year	7,753 (30)	7,749 (20)	3.6 (37)	<+/-1	0.00	0.92	<0.01
Number of CCBHC and comparison facility visit-days per 1,000 beneficiary years	21,241 (293)	20,637 (113)	604 (376)	2.8	0.02	0.11	<0.01
Months with at least 1 CCBHC or comparison facility visit-day, per year	4,355 (35)	4,336 (21)	19 (43)	<+/-1	0.01	0.65	<0.01
Number of BH ambulatory visit-days, excluding CCBHC and comparison facility, per 1,000 beneficiary years	7,572 (196)	7,759 (123)	-187 (237)	-2.5	-0.01	0.43	<0.01
Number of PH ambulatory visit-days, excluding CCBHC and comparison facility, per 1,000 beneficiary years	9,033 (176)	9,036 (113)	-2.3 (207)	<+/-1	0.00	0.99	<0.01
Total inpatient stays, per 1,000 beneficiary years	134 (2.9)	131 (1.9)	2.6 (3.4)	1.9	0.01	0.45	<0.01
Number of BH inpatient stays, per 1,000 beneficiary years	95 (2.5)	85 (1.5)	10 (3.1)	11	0.04	<0.01	<0.01

Table D.4. (continued)

	Treatment group mean (SE)	Weighted comparison group mean (SE)	Adjusted difference (SE)	Percentage difference	Standardized difference	t-test p-value	Equivalence p-value
Number of PH inpatient stays, per 1,000 beneficiary years	39 (1.6)	47 (1.2)	-7.6 (1.9)	-19	-0.05	<0.01	<0.01
Total ED visit-days, per 1,000 beneficiary years	1,681 (28)	1,523 (19)	158 (35)	9.4	0.05	<0.01	<0.01
Number of BH ED visit-days, per 1,000 beneficiary years	175 (6.3)	148 (3.6)	28 (8.5)	16	0.04	<0.01	<0.01
Number of PH ED visit-days, per 1,000 beneficiary years	1,506 (25)	1,375 (17)	130 (31)	8.7	0.05	<0.01	<0.01
Any inpatient stays, %	21 (0.39)	20 (0.25)	0.84 (0.46)	4.0	0.02	0.07	<0.01
Any ED visit-days, %	69 (0.44)	63 (0.30)	6.3 (0.55)	9.1	0.14	<0.01	<0.01
Costs (during two-year baseline period)							
Total FFS costs for all visits and inpatient stays, PBPM	3,131 (80)	3,156 (71)	-25 (100)	<+/-1	0.00	0.80	<0.01
FFS costs for all ambulatory visit-days, PBPM	1,201 (26)	1,115 (19)	86 (32)	7.2	0.03	<0.01	<0.01
FFS costs for ED visits, PBPM	77 (1.9)	72 (1.3)	4.9 (2.3)	6.4	0.03	0.03	<0.01
FFS costs for all inpatient stays, PBPM	1,496 (64)	1,630 (59)	-135 (82)	-9.0	-0.02	0.10	<0.01
Propensity score	0.33 (0.00)	0.32 (0.00)	0.01 (0.00)	1.9	0.05	<0.01	<0.01
Number of beneficiaries	10,839	25,836					

Source: Mathematica analyses of Medicaid enrollment, claims, and demographic data provided by the State of Oklahoma.

Note: Standard errors in parentheses. Standardized difference calculated as the ratio of the treatment-comparison difference and the treatment group standard deviation. p-values come from a weighted 2-sample t-test; equivalence test p-values are the greater of the p-values for the 2 1-sided weighted t-tests of whether the true treatment-comparison difference exceeded 0.25 standard deviations of the variable. The comparison group means in the table are calculated by weighting observations by the matching weight. Unlike the weight used in the model results tables in the body of the report and Table D.6-D.8, the matching weight does not account for the number of months a beneficiary was eligible for full-status Medicaid.

a. The CDPS was developed by researchers at the University of California, San Diego to adjust Medicaid payments to MCOs. A higher CDPS score signifies a higher expected risk profile and higher expected spending, whereas a lower CDPS score signifies a lower expected risk and lower expected spending (Kronick et al. 2000). The scores are normalized so that the average spending in each population is 1. A score above 1 indicates higher than average expected spending, and a score below 1 indicates lower than average spending.

Pennsylvania. The Pennsylvania treatment and comparison groups were less unbalanced than the Missouri groups prior to propensity score matching. However, several characteristics did vary between groups, especially regarding service use at baseline. A higher proportion of the Pennsylvania treatment group was male (54 percent compared to 48 percent), and a lower proportion was White race (49 percent compared to 61 percent), Hispanic ethnicity (12 percent compared to 17 percent), and disabled (21 percent compared to 26 percent) than the comparison group. A smaller proportion of the treatment group had at least one of the diagnoses included in our behavioral health grouper variable (60 percent compared to 66 percent, respectively), but a higher proportion of the treatment group had an SUD (37 percent compared to 24 percent), driven by drug use disorders (32 percent compared to 21 percent) and opioid use disorder (16 percent compared to 12 percent). These SUD-related differences are not surprising given the high SUD needs nature of the CCBHC client population we discovered, described further below. Finally, the treatment and comparison groups also differed on most measures of service use at baseline. The treatment group had 11 percent more all-cause inpatient stays, 9 percent more all-cause ED visit-days, and 9 percent fewer ambulatory visit-days than the comparison group, driven in part by the treatment group's 16 percent fewer CCBHC and comparison facility visit-days at baseline.

After propensity score matching, all weighting variables were within 0.1 standardized differences indicating excellent matching (Table D.5). All differences between the treatment and comparison groups prior to matching were resolved. The final beneficiary counts were 6,620 treatment and 22,571 comparison, for a treatment: comparison ratio of 1:3.4.

Table D.5. Baseline Characteristic of Treatment and Matched Comparisons Beneficiaries for Pennsylvania

	Treatment group mean (SE)	Matched comparison group mean (SE)	Adjusted difference (SE)	Percentage difference	Standardized difference	t-test p-value	Equivalence p-value
Demographics (during start month of demonstration)							
Age	25 (0.18)	24 (0.10)	0.58 (0.25)	2.3	0.04	0.02	<0.01
Male, %	54 (0.61)	53 (0.33)	1.5 (0.88)	2.8	0.03	0.08	<0.01
Race - White, %	49 (0.61)	48 (0.33)	1.5 (0.84)	3.1	0.03	0.07	<0.01
Race - Black, %	38 (0.60)	41 (0.32)	-2.4 (0.84)	-6.3	-0.05	<0.01	<0.01
Race - other, %	12 (0.40)	11 (0.23)	0.92 (0.56)	7.5	0.03	0.10	<0.01
Urban, %	23 (0.52)	22 (0.31)	1.5 (0.73)	6.6	0.04	0.03	<0.01
Suburban, %	76 (0.52)	77 (0.31)	-1.4 (0.73)	-1.8	-0.03	0.05	<0.01
Rural, %	0.56 (0.09)	0.70 (0.06)	-0.14 (0.13)	-26	-0.02	0.29	<0.01
Eligibility and enrollment							
Number of months of full scope Medicaid eligibility in baseline	22 (0.04)	23 (0.02)	-0.08 (0.06)	<+/-1	-0.02	0.18	<0.01
Medicaid eligibility category is adult in start month of demonstration, %	30 (0.56)	26 (0.29)	3.3 (0.76)	11	0.07	<0.01	<0.01
Medicaid eligibility category is child in start month of demonstration, %	49 (0.61)	53 (0.33)	-3.2 (0.85)	-6.4	-0.06	<0.01	<0.01
Medicaid eligibility category is disabled in start month of demonstration, %	21 (0.50)	21 (0.27)	-0.12 (0.68)	<+/-1	0.00	0.86	<0.01
Months of enrollment in BH MCO during baseline (Pennsylvania only)	14 (0.12)	14 (0.07)	-0.02 (0.18)	<+/-1	0.00	0.92	<0.01
Months of enrollment in PH MCO during baseline (Pennsylvania only)	14 (0.12)	15 (0.07)	-0.18 (0.17)	-1.2	-0.02	0.29	<0.01
Most recent CCBHC/CMHC visit during the baseline was in the first 6 months of baseline, %	13 (0.42)	15 (0.22)	-1.3 (0.60)	-9.9	-0.04	0.03	<0.01

Table D.5. (continued)

	Treatment group mean (SE)	Matched comparison group mean (SE)	Adjusted difference (SE)	Percentage difference	Standardized difference	t-test p-value	Equivalence p-value
Most recent CCBHC/CMHC visit during the baseline was in the second 6 months of baseline, %	22 (0.51)	21 (0.26)	0.75 (0.72)	3.4	0.02	0.30	<0.01
Most recent CCBHC/CMHC visit during the baseline was in the third 6 months of baseline, %	23 (0.51)	21 (0.27)	1.4 (0.71)	6.2	0.03	0.05	<0.01
Most recent CCBHC/CMHC visit during the baseline was in the fourth 6 months of baseline, %	42 (0.61)	43 (0.33)	-0.84 (0.83)	-2.0	-0.02	0.31	<0.01
Health status and diagnosis (during 2-year baseline period)							
CDPS score in baseline ^a (mean)	2.1 (0.02)	2.1 (0.01)	0.02 (0.03)	1.1	0.01	0.40	<0.01
Any behavioral health condition	70 (0.56)	69 (0.32)	1.5 (0.80)	2.2	0.03	0.06	<0.01
Any mental health condition	60 (0.60)	61 (0.33)	-1.6 (0.84)	-2.7	-0.03	0.05	<0.01
Anxiety	39 (0.60)	41 (0.32)	-1.3 (0.85)	-3.2	-0.03	0.14	<0.01
Bipolar	24 (0.52)	23 (0.27)	0.57 (0.72)	2.4	0.01	0.43	<0.01
Depressive disorders	39 (0.60)	38 (0.32)	0.26 (0.83)	<+/-1	0.01	0.76	<0.01
Schizophrenia and other psychotic disorders	9.5 (0.36)	10.0 (0.20)	-0.47 (0.53)	-5.0	-0.02	0.37	<0.01
Any SUD	37 (0.59)	34 (0.30)	2.7 (0.82)	7.4	0.06	<0.01	<0.01
Alcohol use	15 (0.44)	13 (0.21)	1.7 (0.60)	11	0.05	<0.01	<0.01
Drug use	32 (0.57)	31 (0.29)	1.4 (0.80)	4.4	0.03	0.08	<0.01
Opioid use	16 (0.45)	15 (0.22)	1.5 (0.62)	9.3	0.04	0.01	<0.01

Table D.5. (continued)

	Treatment group mean (SE)	Matched comparison group mean (SE)	Adjusted difference (SE)	Percentage difference	Standardized difference	t-test p-value	Equivalence p-value
Any physical health condition	36 (0.59)	37 (0.32)	-0.79 (0.84)	-2.2	-0.02	0.35	<0.01
Asthma	18 (0.47)	18 (0.26)	-0.35 (0.66)	-2.0	-0.01	0.60	<0.01
COPD	5.2 (0.27)	5.2 (0.15)	-0.03 (0.39)	<+/-1	0.00	0.93	<0.01
Heart disease	3.6 (0.23)	3.6 (0.12)	-0.04 (0.33)	-1.3	0.00	0.89	<0.01
Hyperlipidemia	6.1 (0.30)	5.8 (0.17)	0.34 (0.41)	5.5	0.01	0.40	<0.01
Hypertension	11 (0.39)	11 (0.21)	0.24 (0.54)	2.1	0.01	0.65	<0.01
Obesity	14 (0.43)	15 (0.24)	-0.64 (0.60)	-4.5	-0.02	0.28	<0.01
Diabetes	4.6 (0.26)	4.8 (0.14)	-0.25 (0.35)	-5.5	-0.01	0.47	<0.01
Service use (during 2-year baseline period)							
Total ambulatory visit-days per 1,000 beneficiary years	37,456 (550)	37,601 (316)	-145 (799)	<+/-1	0.00	0.86	<0.01
Number of CCBHC and comparison facility visit-days per 1,000 beneficiary years	9,714 (258)	9,933 (141)	-219 (348)	-2.3	-0.01	0.53	<0.01
Number of BH ambulatory visit-days, excluding CCBHC and comparison facility, per 1,000 beneficiary years	19,232 (421)	19,128 (262)	104 (623)	<+/-1	0.00	0.87	<0.01
Number of PH ambulatory visit-days, excluding CCBHC and comparison facility, per 1,000 beneficiary years	8,510 (189)	8,540 (79)	-30 (242)	<+/-1	0.00	0.90	<0.01
Total inpatient stays, per 1,000 beneficiary years	266 (8.4)	254 (4.9)	13 (13)	4.7	0.02	0.32	<0.01
Number of BH inpatient stays, per 1,000 beneficiary years	167 (6.9)	159 (4.0)	8.0 (10)	4.8	0.01	0.44	<0.01
Number of PH inpatient stays, per 1,000 beneficiary years	100 (4.0)	95 (2.3)	4.5 (6.0)	4.5	0.01	0.45	<0.01
Total ED visit-days, per 1,000 beneficiary years	1,686 (38)	1,660 (20)	26 (52)	1.6	0.01	0.61	<0.01

Table D.5. (continued)

	Treatment group mean (SE)	Matched comparison group mean (SE)	Adjusted difference (SE)	Percentage difference	Standardized difference	t-test p-value	Equivalence p-value
Number of BH ED visit-days, per 1,000 beneficiary years	213 (9.3)	185 (4.5)	28 (13)	13	0.04	0.03	<0.01
Number of PH ED visit-days, per 1,000 beneficiary years	1,473 (33)	1,475 (18)	-2.1 (46)	<+/-1	0.00	0.96	<0.01
Any inpatient stays, %	25 (0.53)	23 (0.28)	1.7 (0.75)	7.0	0.04	0.02	<0.01
Any ED visit-days, %	73 (0.55)	71 (0.31)	1.9 (0.75)	2.6	0.04	0.01	<0.01
Propensity score	0.06 (0.00)	0.06 (0.00)	0.00 (0.00)	<+/-1	0.01	0.77	<0.01
Number of beneficiaries	6,620	22,571					

Source: Mathematica analyses of Medicaid enrollment, claims, and demographic data provided by the State of Missouri.

Note: Standard errors in parentheses. Standardized difference calculated as the ratio of the treatment-comparison difference and the treatment group standard deviation. p-values come from a weighted 2-sample t-test; equivalence test p-values are the greater of the p-values for the 2 1-sided weighted t-tests of whether the true treatment-comparison difference exceeded 0.25 standard deviations of the variable. The comparison group means in the table are calculated by weighting observations by the matching weight. Unlike the weight used in the model results tables in the body of the report and Table D.6-D.8, the matching weight does not account for the number of months a beneficiary was eligible for full-status Medicaid. Exact matching variables include physical health MCO and behavioral health MCO.

- a. The CDPS was developed by researchers at the University of California, San Diego to adjust Medicaid payments to MCOs. A higher CDPS score signifies a higher expected risk profile and higher expected spending, whereas a lower CDPS score signifies a lower expected risk and lower expected spending (Kronick et al. 2000). The scores are normalized so that the average spending in each population is 1. A score above 1 indicates higher than average expected spending, and a score below 1 indicates lower than average spending.

D. Impacts Analysis Methods for Estimating Impacts

The difference-in-differences model estimates the impact of the program as the difference between the average change over time for treatment beneficiaries and the average change over time for the matched comparison beneficiaries. Impact estimates based on the difference-in-differences framework assume parallel trends for the treatment and comparison groups at baseline. That is, the difference-in-differences estimates are likely to be unbiased as long as there were no significant differences in outcome trends between the treatment and comparison groups at baseline, or reason to suspect that trends would differ for the two groups had the intervention not occurred.

As noted above, the parallel trends assumption was examined visually using line plots for each state after propensity score weighting or matching. There were no obvious violations in our final weighted or matched samples (there is no statistical test for parallel trends). Similarly, the plots were examined for regression to the mean issues. Regression to the mean can occur in matching when extreme comparisons are selected (or weighted heavily) to achieve balance on a baseline variable (particularly the baseline level of an outcome) and then the levels of these comparisons regress back to their mean during the intervention period, biasing the estimated treatment effect (Daw and Hatfield 2018). There was no obvious regression to the mean in the final matched data of any state.

Each beneficiary was measured at least once in the baseline period and again at least once in the intervention period. For each outcome, a single regression model including all pre-intervention and post-intervention observations available for each individual beneficiary in the sample was used to estimate impacts jointly for the two 12-month intervals in the demonstration period. Equation: (1) specifies the regression model used to estimate the impact of the program for continuous outcomes such as number of hospitalizations.

$$(1) \quad y_{it} = \alpha + b_i + \gamma_t * p_t + \theta_t * treatment_i * p_t + \varepsilon_{it}$$

Where y_{it} represents a claims-based outcome variable for beneficiary i in time period t ; α is a constant term; b_i is a beneficiary-level fixed effect for beneficiary i , which controls for all time invariant beneficiary characteristics; p_t (for “post”) is an intervention period indicator that takes the value of 1 during a specific intervention period, for instance, the first 12-month period after enrollment, and 0 otherwise; and $treatment_i$ is a binary indicator of intervention status; the indicator takes the value of 1 if beneficiary i is in the intervention group, and is otherwise 0. The main effect of this indicator is not identified in this equation since it is collinear with the beneficiary fixed effects. ε_{it} is the idiosyncratic error term. It represents unexplained variability in the outcome variable for beneficiary i during period t .

The Greek letters are parameters to be estimated. For example, the intervention period-specific coefficients γ_t capture changes experienced by the comparison group between follow-up interval t and the baseline. The θ_t coefficients are the interval-specific difference-in-differences impact estimates for beneficiaries.

We used an intervention period-only model for binary outcomes because it is not advisable to fit a difference-in-differences model of binary outcomes with beneficiary-level fixed effects (Karaca-Mandic, Norton, and Dowd 2012). This model controlled for the baseline outcome and its interaction with treatment status to allow the treatment effect to vary with the value of the baseline outcome. Also, instead of beneficiary fixed effects, the model controlled for beneficiaries' characteristics at baseline to adjust for any residual imbalance across groups after weighting or matching. The baseline characteristics were typically those used to estimate the propensity score (Table D.2). Unlike in Equation (1), the binary outcome models included the main effect of treatment status.

In all models, standard errors were adjusted for multiple observations for the same beneficiary to allow for serial correlation of the outcomes within individual beneficiaries over time in our longitudinal data set. The models were also weighted by an analytic weight that is the product of the matching weights from the propensity score models described above and an eligibility weight. The eligibility weights account for the number of months the beneficiary was observable in the enrollment and claims data from the start to the end of the period. Beneficiaries were observable in a month if they were alive and enrolled in Medicaid with full benefits.

Two sensitivity analyses were implemented to verify the robustness of the impact estimates of the continuous outcome variables in the main models. First, we extended the baseline period to include the full two years before the intervention start date--as opposed to only one year as in the main impact analysis. Program impacts were otherwise estimated using the same specification as in the main analysis. This sensitivity analysis provides insights into the robustness of the impact estimates to the length of the baseline period. If trends in outcomes for the treatment and comparison groups were not parallel during the baseline period, the impact estimates would be likely to change substantially as the baseline period extends back an additional year. In practice, increasing the length of the baseline period had little effect on the impact estimates in nearly all cases.

Second, we examined the sensitivity of the results to outliers by top-coding outcome variables for both the treatment and comparison groups at the 98th percentile of the outcome distribution in the entire weighted or matched sample observed over a two-year period (one year before and after the intervention). That is, all values above the 98th percentile were replaced with the value of the outcome variable at the 98th percentile and then the models were estimated using the top-coded variables. Again, this had little effect on the impact estimates, suggesting robust results.

Finally, we also estimated difference-in-differences models separately for the following subgroups: (1) adults and children; and (2) beneficiaries diagnosed with SUDs and those without. For each subgroup analysis, the original difference-in-differences models for continuous outcomes were modified to include two-way interactions between a binary indicator for the subgroup and the post-period year indicators and three-way interactions between the binary indicator for the subgroup, the treatment status indicator, and the post-period year indicators. The main effect for the subgroup indicator was not included since it was colinear with the beneficiary fixed effects. In the models for the binary outcomes, in addition to the subgroup terms added in the continuous models, the main effect for the binary subgroup indicator was included as well as the two-way interaction between the treatment status indicator and the binary subgroup indicator.

E. Impact analysis results tables

Table D.6. Impact Findings for Missouri					
	Treatment group mean	Comparison group mean	Impact estimate (SE)	Percentage impact	p-value
Inpatient hospital stays					
All-cause hospital stays per 1,000 beneficiary years					
Baseline year	519	507			
Months 1-12	467	433	21 (24)	4.8%	0.38
Months 13-24	454	404	37 (27)	9.0%	0.17
Cumulative (months 1-24)	460	418	30 (23)	6.9%	0.19
BH-related hospital stays per 1,000 beneficiary years^a					
Baseline year	328	319			
Months 1-12	273	252	12 (19)	4.6%	0.51
Months 13-24	257	231	17 (21)	7.1%	0.42
Cumulative (months 1-24)	265	241	15 (17)	6.0%	0.39
PH-related hospital stays per 1,000 beneficiary years^a					
Baseline year	191	187			
Months 1-12	193	180	9.2 (15)	5.0%	0.55
Months 13-24	197	173	20 (17)	12%	0.22
Cumulative (months 1-24)	195	176	15 (14)	8.1%	0.30
Probability of inpatient stay					
Baseline year	27	26			
Months 1-12	24	23	0.90 (0.86)	3.9%	0.29
Months 13-24	23	21	1.8** (0.87)	8.4%	0.04
Cumulative (months 1-24)	36	35	1.6 (0.96)	4.5%	0.10
ED visits					
All-cause ED visit-days per 1,000 beneficiary years					
Baseline year	1,975	2,032			
Months 1-12	1,839	1,816	80 (75)	4.5%	0.29
Months 13-24	1,750	1,745	62 (102)	3.7%	0.54
Cumulative (months 1-24)	1,796	1,781	72 (82)	4.2%	0.38
BH-related ED visit-days per 1,000 beneficiary years^a					
Baseline year	284	296			
Months 1-12	260	246	26 (21)	11%	0.22
Months 13-24	255	237	31 (25)	14%	0.22
Cumulative (months 1-24)	257	242	28 (21)	12%	0.17
PH-related ED visit-days per 1,000 beneficiary years^a					
Baseline year	1,691	1,736			
Months 1-12	1,579	1,570	54 (69)	3.5%	0.44
Months 13-24	1,495	1,508	31 (93)	2.1%	0.74
Cumulative (months 1-24)	1,539	1,540	44 (75)	2.9%	0.56
Probability of ED visit					
Baseline year	57	56			
Months 1-12	55	56	-0.52 (1.0)	<1%	0.61
Months 13-24	53	53	-0.37 (1.0)	<1%	0.72
Cumulative (months 1-24)	71	71	-0.04 (0.93)	<1%	0.97

Table D.6. (continued)					
	Treatment group mean	Comparison group mean	Impact estimate (SE)	Percentage impact	p-value
Ambulatory visits					
All ambulatory visit-days per 1,000 beneficiary years					
Baseline year	62,947	62,488			
Months 1-12	67,127	65,031	1,637 (1,007)	2.5%	0.10
Months 13-24	64,215	62,664	1,092 (1,363)	1.7%	0.42
Cumulative (months 1-24)	65,817	63,950	1,409 (1,079)	2.2%	0.19
BH-related ambulatory visit-days (including CCBHCs and comparison facilities) per 1,000 beneficiary years^a					
Baseline year	38,305	38,331			
Months 1-12	41,435	39,265	2,196*** (817)	5.6%	<0.01
Months 13-24	38,743	36,658	2,111* (1,114)	5.7%	0.06
Cumulative (months 1-24)	40,204	38,041	2,189** (865)	5.7%	0.01
Visit-days to CCBHC and comparison facilities per 1,000 beneficiary years					
Baseline year	7,142	5,855			
Months 1-12	23,131	5,586	16,258**** (381)	237%	<0.01
Months 13-24	20,445	5,928	13,229**** (460)	178%	<0.01
Cumulative (months 1-24)	21,874	5,755	14,832**** (382)	209%	<0.01
Visit-days to non-CCBHC and non-comparison facility BH providers per 1,000 beneficiary years^a					
Baseline year	31,163	32,476			
Months 1-12	18,304	33,679	-14,062**** (773)	-44%	<0.01
Months 13-24	18,299	30,729	-11,118**** (1,030)	-37%	<0.01
Cumulative (months 1-24)	18,330	32,286	-12,643**** (815)	-41%	<0.01
PH-related ambulatory visit-days (excludes visits to CCBHCs and comparison facilities) per 1,000 beneficiary years^a					
Baseline year	24,642	24,157			
Months 1-12	25,692	25,766	-559 (571)	-2.1%	0.33
Months 13-24	25,471	26,006	-1,019 (779)	-3.8%	0.19
Cumulative (months 1-24)	25,614	25,909	-780 (635)	-3.0%	0.22

Source: Mathematica analyses of Medicaid enrollment and claims data provided by the State of Missouri.

a. We identified stays and visit-days as behavioral health-related by looking at the primary diagnosis code on the underlying claim(s). For more information on measure construction, see Table D.2.

* Significantly different from zero at the 0.10 level, two-tailed test.

** Significantly different from zero at the 0.05 level, two-tailed test.

*** Significantly different from zero at the 0.01 level, two-tailed test.

**** Significantly different from zero at the 0.001 level, two-tailed test.

Table D.7. Impact Findings for Oklahoma

	Treatment group mean	Comparison group mean	Impact estimate (SE)	Percentage impact	p-value
Inpatient hospital stays					
All-cause hospital stays per 1,000 beneficiary years					
Baseline year	104	116			
Months 1-12	72	87	-3.1 (6.2)	-4.0%	0.62
Months 13-24	67	90	-11* (6.6)	-14%	0.08
Cumulative (months 1-24)	70	88	-6.6 (5.7)	-8.4%	0.25
BH-related hospital stays per 1,000 beneficiary years^a					
Baseline year	77	75			
Months 1-12	50	54	-5.6 (5.3)	-9.8%	0.29
Months 13-24	44	51	-8.1 (5.5)	-15%	0.14
Cumulative (months 1-24)	47	52	-6.6 (4.8)	-12%	0.17
PH-related hospital stays per 1,000 beneficiary years^a					
Baseline year	27	41			
Months 1-12	22	33	2.5 (3.2)	13%	0.42
Months 13-24	23	40	-3.2 (3.5)	-12%	0.36
Cumulative (months 1-24)	23	36	0.09 (2.9)	<1%	0.98
Probability of inpatient stay					
Baseline year	9.5	10			
Months 1-12	6.3	7.7	-1.4**** (0.33)	-18%	<0.01
Months 13-24	5.9	7.6	-1.7**** (0.35)	-22%	<0.01
Cumulative (months 1-24)	12	14	-2.6**** (0.45)	-18%	<0.01
ED visits					
All-cause ED visit-days per 1,000 beneficiary years					
Baseline year	1,672	1,505			
Months 1-12	1,569	1,409	-6.3 (34)	<1%	0.85
Months 13-24	1,479	1,328	-16 (42)	-1.1%	0.71
Cumulative (months 1-24)	1,532	1,375	-10 (33)	<1%	0.75
BH-related ED visit-days per 1,000 beneficiary years^a					
Baseline year	170	145			
Months 1-12	134	129	-20** (9.5)	-13%	0.04
Months 13-24	132	118	-12 (14)	-8.1%	0.40
Cumulative (months 1-24)	134	124	-16* (9.4)	-11%	0.08
PH-related ED visit-days per 1,000 beneficiary years^a					
Baseline year	1,502	1,361			
Months 1-12	1,435	1,280	14 (31)	<1%	0.66
Months 13-24	1,347	1,210	-4.3 (37)	<1%	0.91
Cumulative (months 1-24)	1,398	1,251	6.0 (29)	<1%	0.84
Probability of ED visit					
Baseline year	54	49			
Months 1-12	52	47	4.8**** (0.57)	10%	<0.01
Months 13-24	49	46	3.5**** (0.63)	7.7%	<0.01
Cumulative (months 1-24)	67	63	4.7**** (0.54)	7.5%	<0.01

Table D.7 (continued)					
	Treatment group mean	Comparison group mean	Impact estimate (SE)	Percentage impact	p-value
Ambulatory visits					
Number of months with at least 1 ambulatory visit, per beneficiary					
Baseline year	8.1	8.1			
Months 1-12	7.5	7.6	-0.01 (0.04)	<1%	0.79
Months 13-24	6.9	6.9	0.04 (0.05)	<1%	0.40
Cumulative (months 1-24)	7.4	7.4	0.02 (0.04)	<1%	0.66
Number of months with at least 1 CCBHC or comparison facility ambulatory visit, per beneficiary					
Baseline year	4.7	4.7			
Months 1-12	4.0	4.1	-0.05 (0.05)	-1.3%	0.30
Months 13-24	3.2	3.1	0.12* (0.06)	3.5%	0.06
Cumulative (months 1-24)	3.8	3.7	0.03 (0.05)	<1%	0.57
PH-related ambulatory visit-days (excludes visits to CCBHCs and comparison facilities) per 1,000 beneficiary years^a					
Baseline year	9,276	9,370			
Months 1-12	8,786	9,222	-342** (146)	-3.7%	0.02
Months 13-24	8,560	8,816	-163 (194)	-1.8%	0.40
Cumulative (months 1-24)	8,714	9,069	-261* (153)	-2.8%	0.09
Medicaid spending					
Total Medicaid spending PBPM					
Baseline year	2,681	2,847			
Months 1-12	2,938	2,486	618**** (170)	26%	<0.01
Months 13-24	3,576	2,783	959**** (249)	35%	<0.01
Cumulative (months 1-24)	3,229	2,619	775**** (170)	30%	<0.01
Medicaid spending for inpatient services PBPM					
Baseline year	954	1,228			
Months 1-12	646	869	51 (143)	8.4%	0.72
Months 13-24	687	959	0.90 (195)	<1%	1.00
Cumulative (months 1-24)	659	903	30 (138)	4.5%	0.83
Medicaid spending for ED visits PBPM					
Baseline year	80	74			
Months 1-12	77	72	-0.56 (2.8)	<1%	0.84
Months 13-24	83	77	0.43 (3.3)	<1%	0.90
Cumulative (months 1-24)	80	74	-0.19 (2.6)	<1%	0.94
Medicaid spending for all ambulatory visits PBPM					
Baseline year	1,304	1,182			
Months 1-12	1,922	1,201	599**** (66)	44%	<0.01
Months 13-24	2,418	1,321	975**** (79)	64%	<0.01
Cumulative (months 1-24)	2,153	1,261	770**** (61)	54%	<0.01
Medicaid spending for ambulatory visits at CCBHC and comparison facilities PBPM					
Baseline year	256	172			
Months 1-12	844	149	611**** (19)	246%	<0.01
Months 13-24	1,266	201	981**** (38)	293%	<0.01
Cumulative (months 1-24)	1,040	172	784**** (25)	275%	<0.01

Source: Mathematica analyses of Medicaid enrollment and claims data provided by the state of Oklahoma.

a. We identified stays and visit-days as behavioral health-related by looking at the primary diagnosis code on the underlying claim(s). For more information on measure construction, see Table D.2.

* Significantly different from zero at the 0.10 level, two-tailed test.

** Significantly different from zero at the 0.05 level, two-tailed test.

*** Significantly different from zero at the 0.01 level, two-tailed test.

**** Significantly different from zero at the 0.001 level, two-tailed test.

Table D.8. Impact Findings for Pennsylvania

	Treatment group mean	Comparison group mean	Impact estimate (SE)	Percentage impact	p-value
Inpatient hospital stays					
All-cause hospital stays per 1,000 beneficiary years					
Baseline year	257	248			
Months 1-12	199	201	-11 (13)	-5.5%	0.39
Months 13-24	198	197	-8.0 (14)	-4.1%	0.58
Cumulative (months 1-24)	198	199	-10 (12)	-5.0%	0.39
BH-related hospital stays per 1,000 beneficiary years^a					
Baseline year	155	155			
Months 1-12	108	112	-3.7 (11)	-3.3%	0.73
Months 13-24	106	104	1.6 (12)	1.6%	0.90
Cumulative (months 1-24)	107	108	-1.1 (9.8)	-1.0%	0.91
PH-related hospital stays per 1,000 beneficiary years^a					
Baseline year	102	93			
Months 1-12	91	90	-7.7 (8.0)	-8.0%	0.33
Months 13-24	92	93	-9.5 (8.4)	-9.9%	0.26
Cumulative (months 1-24)	91	91	-9.1 (7.0)	-9.4%	0.20
Probability of inpatient stay					
Baseline year	16	15			
Months 1-12	14	14	-0.49 (0.58)	-3.4%	0.40
Months 13-24	12	13	-0.94* (0.55)	-7.5%	0.09
Cumulative (months 1-24)	21	22	-0.67 (0.65)	-3.1%	0.30
ED visit-days					
All-cause ED visit-days per 1,000 beneficiary years					
Baseline year	1,673	1,632			
Months 1-12	1,491	1,527	-78 (51)	-4.9%	0.12
Months 13-24	1,404	1,421	-59 (51)	-4.0%	0.25
Cumulative (months 1-24)	1,451	1,475	-66 (45)	-4.3%	0.14
BH-related ED visit-days per 1,000 beneficiary years^a					
Baseline year	215	183			
Months 1-12	169	163	-26* (16)	-14%	0.10
Months 13-24	157	147	-22 (15)	-13%	0.14
Cumulative (months 1-24)	164	155	-23* (14)	-13%	0.09
PH-related ED visit-days per 1,000 beneficiary years^a					
Baseline year	1,459	1,449			
Months 1-12	1,322	1,364	-51 (45)	-3.7%	0.25
Months 13-24	1,246	1,274	-37 (46)	-2.8%	0.43
Cumulative (months 1-24)	1,288	1,321	-42 (40)	-3.2%	0.29
Probability of ED visit					
Baseline year	57	55			
Months 1-12	55	55	0.35 (0.74)	<1%	0.63
Months 13-24	51	51	0.57 (0.80)	1.1%	0.47
Cumulative (months 1-24)	70	70	-0.11 (0.66)	<1%	0.86

Table D.8 (continued)					
	Treatment group mean	Comparison group mean	Impact estimate (SE)	Percentage impact	p-value
Ambulatory visits					
All ambulatory visit-days per 1,000 beneficiary years					
Baseline year	37,451	36,947			
Months 1-12	30,886	33,721	-3,339**** (652)	-9.5%	<0.01
Months 13-24	27,964	30,233	-2,773**** (773)	-8.9%	<0.01
Cumulative (months 1-24)	29,507	32,064	-3,062**** (641)	-9.2%	<0.01
BH-related ambulatory visit-days (including CCBHCs and comparison facilities) per 1,000 beneficiary years^a					
Baseline year	28,875	28,378			
Months 1-12	22,688	24,885	-2,695**** (605)	-10%	<0.01
Months 13-24	20,343	22,035	-2,190*** (729)	-9.5%	<0.01
Cumulative (months 1-24)	21,597	23,532	-2,432**** (604)	-9.9%	<0.01
Ambulatory visit-days to CCBHC and comparison facilities per 1,000 beneficiary years					
Baseline year	9,314	9,117			
Months 1-12	5,213	6,795	-1,779**** (291)	-25%	<0.01
Months 13-24	3,859	5,075	-1,413**** (366)	-25%	<0.01
Cumulative (months 1-24)	4,552	5,937	-1,582**** (310)	-24%	<0.01
Ambulatory visit-days to non-CCBHC and non-comparison BH providers per 1,000 beneficiary years^a					
Baseline year	19,561	19,261			
Months 1-12	17,474	18,090	-915* (525)	-4.8%	0.08
Months 13-24	16,484	16,961	-777 (628)	-4.5%	0.22
Cumulative (months 1-24)	17,045	17,595	-850* (513)	-4.7%	0.10
PH-related ambulatory visit-days (excludes visits to CCBHCs and comparison facilities) per 1,000 beneficiary years^a					
Baseline year	8,576	8,569			
Months 1-12	8,199	8,836	-645*** (215)	-7.3%	<0.01
Months 13-24	7,622	8,198	-583** (256)	-7.2%	0.02
Cumulative (months 1-24)	7,910	8,533	-630*** (206)	-7.4%	<0.01

Source: Mathematica analyses of Medicaid enrollment and claims data provided by the State of Pennsylvania.

a. We identified stays and visit-days as behavioral health-related by looking at the primary diagnosis code on the underlying claim(s). For more information on measure construction, see Table D.2.

* Significantly different from zero at the 0.10 level, two-tailed test.

** Significantly different from zero at the 0.05 level, two-tailed test.

*** Significantly different from zero at the 0.01 level, two-tailed test.

**** Significantly different from zero at the 0.001 level, two-tailed test.