Independent Evaluation Design Document

Massachusetts 1115 Demonstration Extension 2022-2027

Prepared by

The UMass Chan Medical School

for

The Massachusetts Executive Office of Health
and Human Services

and

The Centers for Medicare and Medicaid Services

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Evaluation Design Document (EDD) Acronyms

Acronym	Definition
ACO	Accountable Care Organization
ACPP	Accountable Care Partnership Plan
ACS	American Community Survey
AHRQ	Agency for Healthcare Research and Quality
APCD	All-Payer Claims Database
APM	Alternative Payment Methods
APTC	Advanced Premium Tax Credit
ASAM	American Society of Addiction Medicine
BBL	Basic Benefit Level
BCCDP	Breast and Cervical Cancer Demonstration Program
BH	Behavioral Health
BH-JI	Behavioral Health Supports for Justice-Involved Individuals
BRFSS	Behavioral Risk Factor Surveillance System
BSAS	Bureau of Substance Addiction Services
CARES	MassHealth Coordinating Aligned, Relationship-Centered, Enhanced Support
CBAT	Community-Based Acute Treatment for Children and Adolescents
CBHC	Community Behavioral Health Center
CCS	Community Crisis Stabilization
CDC	Centers for Disease Control and Prevention
CE	Continuous Eligibility
C&E	Coverage and Eligibility
CFIR	Consolidated Framework for Implementation Research
CG-CAHPS	Clinician and Group Consumer Assessment of Healthcare Providers and Systems
CHA	Cambridge Health Alliance
CHC	Community Health Center
CHIA	Center for Health Information Analysis
CHIP	Children's Health Insurance Program
CHW	Community Health Worker
CIS-CH	Childhood Immunization Status

Acronym	Definition
CMS	Centers for Medicare and Medicaid Services
CP	Community Partner
CPT	Current Procedural Terminology
CSP	Community Support Program
CSP-HI	Community Support Program for Homeless Individuals
CSP-JI	Community Support Program for Individuals with Justice Involvement
CSP-TPP	Community Support Program for Tenancy Preservation Program
CTI	Comprehensive Theory of Integration
CY	Calendar Year
DCE	Discrete Choice Experiment
DEA	Drug Enforcement Administration
DMH	Department of Mental Health
DPH	Department of Public Health
DSH	Disproportionate Share Hospital
DSH-like	Disproportionate Share Hospital-like
DSR	Delivery System Reform
DSRIP	Delivery System Reform Incentive Payment
DY	Demonstration Year
ED	Emergency Department
EDD	Evaluation Design Document
EHR	Electronic Health Record
ENS	Emergency Notification Systems
EOHHS	Executive Office of Health and Human Services
EPSDT	Early and Periodic Screening, Diagnostic, and Treatment
ESI	Employer-Sponsored Insurance
ESR	Evaluation Summative Report
FFCRA	Families First Coronavirus Response Act
FFP	Federal Financial Participation
FFS	Fee-For-Service
FG	Focus Group
FMCH	Family Medicine and Community Health

Acronym	Definition
FNP	Family Nurse Practitioner
FPL	Federal Poverty Level
FSP	Flexible Service Program
FUA-AD	Follow-Up After Emergency Department Visit for Alcohol and Other Drug Abuse or Dependence
FUA-CH	Follow-Up After Emergency Department Visit for Substance Use: Ages 13 to 17
FUH-AD	Follow-up After Hospitalization for Mental Illness
FY	Fiscal Year
HCAHPS	Hospital Consumer Assessment of Healthcare Providers and Systems
HCUP	Hospital Cost and Utilization Project
HIX	Health Insurance Exchange
HPC	Health Policy Commission
HQEI	Hospital Quality and Equity Initiative
HRSN	Health-Related Social Needs
HSN	Health Safety Net
ICC	Intensive Care Coordination
ICD	International Classification of Diseases
IE	Independent Evaluator
IEIR	Independent Evaluation Interim Report
IET	Initiation and Engagement of Alcohol and Other Drug Dependence Treatment
ILC	Independent Living Center
IMD	Institution for Mental Diseases
ISA	Interdepartmental Service Agreement
ITS	Interrupted Time Series
KII	Key Informant Interview
LOS	Length of Stay
LTSS	Long-Term Services and Supports
MA	Medical Assistant
MA-APCD	Massachusetts All-Payer Claims Database
MAGI	Modified Adjusted Gross Income

Acronym	Definition
MAT	Medication for Addiction Treatment
MCO	Managed Care Organization
MD	Medical Doctor
MES	Member Experience Survey
MHQP	Massachusetts Health Quality Partners
MMIS	MassHealth Medicaid Management Information System
MOUD	Medication for Opioid Use Disorder
MSP	Medicare Savings Program
NCQA	National Committee for Quality Assurance
NIMH	National Institute of Mental Health
NP	Nurse Practitioner
NQF	National Quality Forum
NSDUH	National Survey on Drug Use and Health
NSS	Neighborhood Stress Score
O-E ratio	Observed-to-Expected Ratio
OUD	Opioid Use Disorder
PA	Physician Assistant
PACT	Program for Assertive Community Treatment
PCACO	Primary Care Accountable Care Organization
PCC	Primary Care Clinician (Used in context of plan, not defined)
PCDI	Payment and Care Delivery Innovation
PCP	Primary Care Provider
PE	Provisional Eligibility
PFAC	Patient and Family Advisory Committee
PHD	Public Health Data Warehouse
PHE	Public Health Emergency
PHTII	Public Hospital Transformation and Incentive Initiative
PMPM	Per-Member-Per-Month
PPC-CH	Prenatal and Postpartum Care: Timeliness of Prenatal Care
PSPIC	Provider and Staff Perceptions of Integrated Care
PY	Performance Year

Acronym	Definition
QED	Quasi-Experimental Design
QI	Qualitative Interviewing
RE	Retroactive Eligibility
RELDSOGI	Race, Ethnicity, Language, Disability, Social Orientation, Gender Identity
RF	Risk Factor
RFP	Request for Proposal
RN	Registered Nurse
RQ	Research Question
SAC	Scientific Advisory Committee
SAMHSA	Substance Abuse and Mental Health Services Administration
SED	Severe Emotional Disturbance
SFY	State Fiscal Year
SME	Subject Matter Expert
SMI	Serious Mental Illness
SNCP	Safety Net Care Pool
SNH	Safety Net Hospital
SNPP	Safety Net Provider Payments
SSO	Social Service Organization
STC	Special Terms and Conditions
SUD	Substance Use Disorder
SWI	Statewide Investments
TA	Technical Assistance
TCOC	Total Cost of Care
TJC	The Joint Commission
UC	Uncompensated Care
UCCR	Uncompensated Care Cost & Charge Report
WI	Workforce Initiatives
WONDER	Wide-ranging Online Data for Epidemiologic Research

1. Executive Summary

1.1. Demonstration Overview

MassHealth, a combination of the Massachusetts Medicaid and Children's Health Insurance Program (CHIP), serves over 2.16 million Massachusetts residents as of December 2022. Massachusetts has long used a Section 1115 Demonstration Project (Demonstration) to pilot innovative strategies for delivering and financing healthcare for many MassHealth members. Since its launch in 1997, the Demonstration has served as a vehicle to expand coverage, encourage better coordination and cost containment through managed care, and support safety net providers, among other innovations. A precursor to the coverage expansions under the Affordable Care Act, the Demonstration played a key role during the Commonwealth of Massachusetts' 2006 healthcare reform (also known as Chapter 58 of the Acts of 2006) that made coverage available across the income spectrum through changes to the individual marketplace and Medicaid. In 2012, the Commonwealth passed further legislation (Chapter 224 of the Acts of 2012) to address the high cost of healthcare and the need for better care integration. This legislation set healthcare cost benchmarks for the state and created a new independent state agency, the Health Policy Commission (HPC), to monitor healthcare costs. The legislation also directed MassHealth to implement new ways of paying for and delivering more integrated care.

In 2016, the Commonwealth requested a five-year extension of the Demonstration to improve care delivery, control costs, and address the opioid epidemic. On November 4, 2016, the Centers for Medicare and Medicaid Services (CMS) approved the sixth extension of the Demonstration for the period of July 1, 2017, through June 30, 2022. On June 9, 2022, CMS approved a three-month Demonstration extension through September 30, 2022.

In the extension of the Demonstration awarded on November 4, 2016, CMS approved the Commonwealth's plan to implement significant new components to support a value-based restructuring of MassHealth's healthcare delivery and payment system and a Delivery System Reform Incentive Payment (DSRIP) Program to transition the MassHealth delivery system into accountable care models. The extension's Safety Net Care Pool (SNCP) provisions aligned funding with MassHealth's broader accountable care strategies and expectations to establish a more sustainable structure for necessary and ongoing funding support to safety net providers.

In March 2022, the Commonwealth submitted the Independent Evaluation Interim Report (IEIR) to CMS for the 2017-2022 Demonstration period.[1] The primary finding from the IEIR was that MassHealth and its partners collaborated extensively and made valuable, measurable progress in the early years of the implementation toward transforming healthcare delivery and improving care processes at the organizational

[1] Commonwealth of Massachusetts. (2022, September 29). Revised Draft Independent Evaluation Interim Report. Massachusetts Medicaid 1115 Demonstration Extension 2017-2022. Mass.gov. https://www.mass.gov/doc/cms-approved-interim-evaluation-report/download

level. Findings from the first 18 months showed substantial progress in implementing the program as designed and early evidence of progress on outcomes of interest.

Early signs of improvement in clinical outcomes and progress in shifting utilization from high-cost to lower-cost outpatient settings while maintaining high member satisfaction levels were especially encouraging. With support from MassHealth, participating organizations have overcome many challenges associated with developing new relationships, enhancing technology infrastructure, and operating under an integrated and accountable care model.

Among other findings reported in the IEIR, it is notable that the Demonstration successfully kept the Commonwealth's uninsurance rate the lowest in the country — 2.4 percent as of 2021. The IEIR also found that overall, aggregate uncompensated care (UC) costs across the 14 participating safety net hospitals (SNH) that received Safety Net Provider Payments (SNPP) decreased during the Demonstration. In addition, the preliminary findings in the IEIR were generally positive for members diagnosed with a substance use disorder (SUD), such as decreases in the rate of opioid overdoses and increases in the number of providers treating SUD. However, findings were mixed related to the initiation and engagement of MassHealth members in SUD treatment.

As shown by budget neutrality calculations reported by MassHealth, the Demonstration has lower costs than would otherwise be accrued without the Demonstration. An internal analysis by MassHealth confirms that per-member-per-month (PMPM) costs for MassHealth beneficiaries will continue to be lower than they would have been without the Demonstration.

On September 28, 2022, CMS approved Massachusetts' request — entitled "MassHealth" (Project Number 11-W-00030/1 and 21-W00071/1) — to extend the Demonstration for another five years to enable the Commonwealth to achieve the following Demonstration goals:

1. Continue the path of restructuring and reaffirming accountable, value-based care — increasing expectations for how Accountable Care Organizations (ACOs) improve care and trend management and refining the model;
2. Make reforms and investments in primary care, behavioral health (BH), and pediatric care that expand access and move the delivery system away from siloed, fee-for-service (FFS) healthcare;
3. Continue to improve access to quality and equity of care with a focus on initiatives addressing health-related social needs (HRSN) and specific improvement areas relating to health quality and equity, including maternal healthcare and healthcare for justice-involved individuals who are in the community;
4. Support the Commonwealth's safety net, including ongoing, predictable funding for safety net providers, with a continued linkage to accountable care; and

5. Maintain near-universal coverage, including updates to eligibility policies to support coverage and equity. This Demonstration is effective October 1, 2022, through December 31, 2027.

The approval will extend many longstanding authorities and allow the Commonwealth, through various new and revised waiver and expenditure authorities, to test the efficacy of innovative practices aimed at promoting consistently high-quality, equity-promoting, evidence-based, coordinated, and integrated care. These practices are designed to address the combined goals of providing medical assistance, addressing HRSN, and improving the health of the communities served through the Demonstration. The extension will also lead to additional populations being served by Medicaid and additional services being furnished to Medicaid beneficiaries.

1.2. Selection of the Independent Evaluator and Assurance of Independence

Based on previous performance and familiarity with MassHealth programs, policies, and data systems, Massachusetts has selected the University of Massachusetts Chan Medical School (UMass Chan) as the Independent Evaluator (IE) for the 2022-2027 Demonstration. The independent evaluation will also be informed by review and guidance from a Scientific Advisory Committee (SAC) and external reviewers comprised of nationally recognized experts in Medicaid systems transformation, program evaluation, and health services research. Further detail on UMass Chan's qualifications, key personnel, lack of conflict of interest, and the SAC and external reviewers can be found in Appendix A.

1.3. Overview of the 2022-2027 EDD

The development of this EDD has been guided by the Demonstration's Special Terms and Conditions (STC) dated September 28, 2022, and subsequent communications and guidance from CMS.[2] STC 17 Evaluation of the Demonstration and the CMS technical assistance memo identified multiple "policy components" and subject areas for evaluation that overlapped with the state's five Demonstration goals. The IE team worked with MassHealth subject matter experts to crosswalk the CMS required and recommended evaluation components with the Massachusetts Demonstration goals to identify seven "policy domains" that include the policy components for evaluation identified by CMS (see Table 1-1).

The following policy domains will be the subject of the Independent Evaluation:

- See Coverage and Eligibility
- See Delivery System Reform
- See Behavioral Health
- See Safety Net Care Pool
- See Workforce Initiatives

[2] Centers for Medicare & Medicaid Services. (2022, September 28). Technical Assistance on MassHealth Section 1115 Demonstration; 1115 MassHealth Demonstration ("Waiver") | Mass.gov and https://www.medicaid.gov/medicaid/section-1115-demonstrations/1115-demonstration-monitoring-evaluation/1115-demonstration-state-monitoring-evaluation-resources/index.html

- See Hospital Quality and Equity Initiative
- See Health-Related Social Needs

Table 1-1: Crosswalk of EDD Policy Domains, MH Goals, CMS Evaluation Components, and Corresponding STCs

EDD Chapter and MassHealth Policy Domains	MH Goal(s)	CMS Required and Recommended Evaluation Components[2]	New, Revised, or Continuing 1115 Policy	Corresponding STCs
2. Coverage and Eligibility	5	Waiver of Retroactive Eligibility	Revised	4.2, 8.13, 16.5.vi, 17.6h
2. Coverage and Eligibility	5	Streamlined Eligibility Redetermination	Continuing	4.4
2. Coverage and Eligibility	5	Provisional Coverage for Individuals who Self Attest to Eligibility*	Continuing	4.7
2. Coverage and Eligibility	3, 5	Continuous Eligibility	New	4.10, 4.11, 16.5.iv, 17.6f
2. Coverage and Eligibility	5	Waiver of Early and Periodic Screening, Diagnostic, and Treatment Services	Continuing	5.3, 5.6
2. Coverage and Eligibility	3, 5	Breast and Cervical Cancer Demonstration Program	Continuing	4.8, 5.5
2. Coverage and Eligibility	3, 5	MassHealth CommonHealth	Continuing	5.6
2. Coverage and Eligibility	3, 5	MassHealth Family Assistance	Continuing	5.7
2. Coverage and Eligibility	5	Extended Eligibility for Out-of-State Former Foster Care Youth Residing in Massachusetts*	Continuing	5.9
2. Coverage and Eligibility	1, 5	Premium Assistance for Marketplace and Employment Sponsored Insurance (ESI)	Continuing	8.12, 10.1, 16.5.v, 17.6g
2. Coverage and Eligibility	5	Beneficiary Cost Sharing (Premiums and Copayments)	Continuing	9.1, 17.6g
2. Coverage and Eligibility	5	Medicare Savings Program Expansion	Revised	5.3c
3. Delivery System Reform	1, 2, 4	Managed Care Delivery System, including (1) Accountable Care Partnership Plans, (2) Community Partner Program, and (3) the Authority to Allow Primary Care Service Payment Rates for Accountable Care Organization Participating Providers	Revised	8.1-8.13, 17.6i
4. Behavioral Health	1, 2	Diversionary Behavioral Health Services	Continuing and Revised	5.11, 17.6

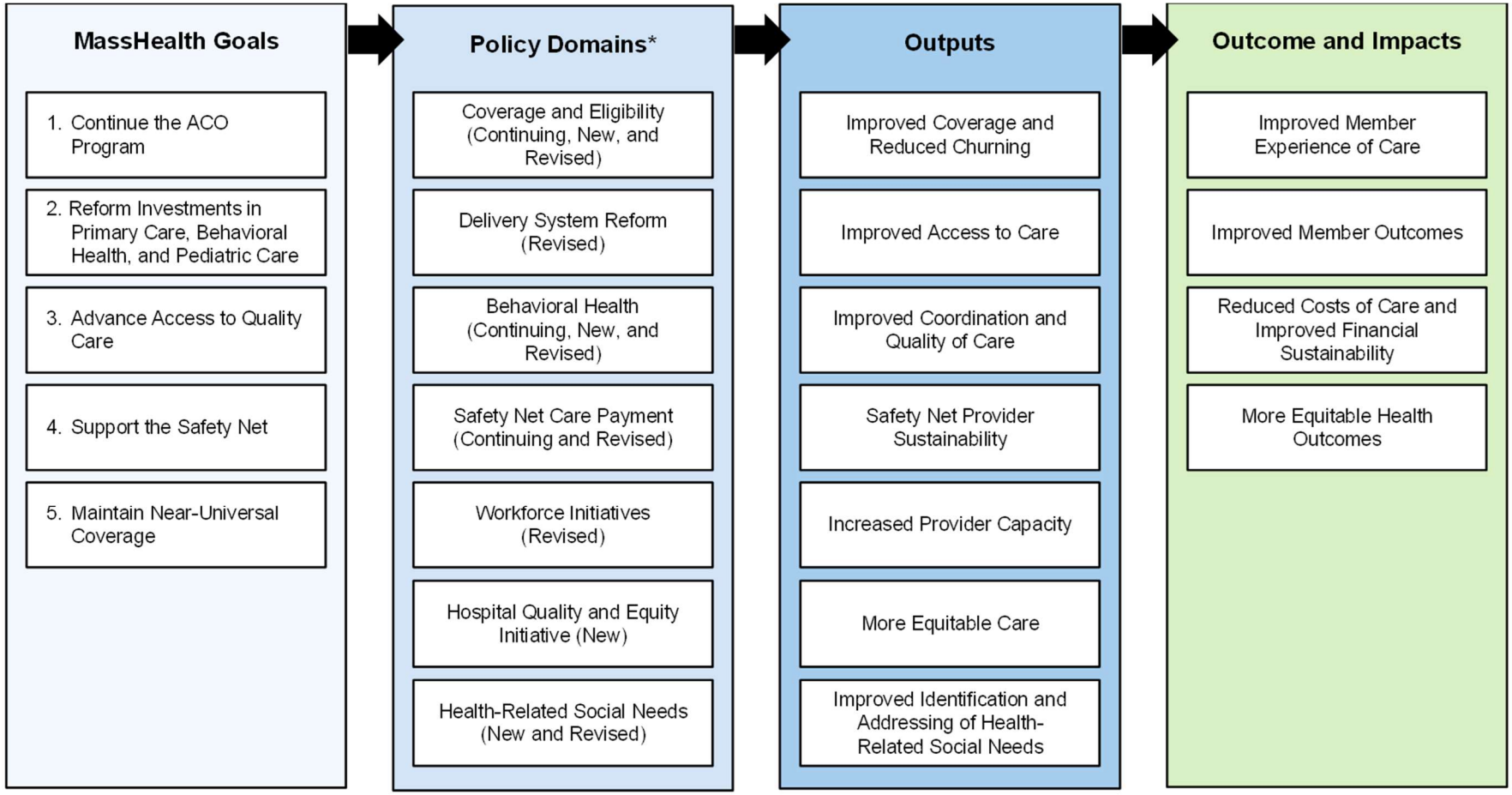
EDD Chapter and MassHealth Policy Domains	MH Goal(s)	CMS Required and Recommended Evaluation Components[2]	New, Revised, or Continuing 1115 Policy	Corresponding STCs
4. Behavioral Health	1, 2	Opioid Use Disorder (OUD)/Substance Use Disorder Program (SUD)	Continuing and Revised as of August 2022	6.1, 17.6a
4. Behavioral Health	1, 2	Serious Mental Illness (SMI)/Serious Emotional Disturbance (SED) Programs	New as of August 2022	7.1, 17.6b
5. Safety Net Care Pool	4	Safety Net Care Pool (SNCP)	Continuing and Revised	11.1-11.6
6. Workforce Initiatives	2	Workforce Initiatives	Revised	13.1 - 13.8, 14.5a, 15.17, 17.6d
7. Hospital Quality and Equity Initiative	3	Hospital Quality and Equity Initiative	New	14.1 -14.23, 17.6c
8. Health-Related Social Needs	1, 3	Provision of Services to Address Health-related Social Needs, Including Infrastructure Costs	New and Revised	15.1 -15.18, 17.6e

*These two policies were designated as optional for evaluation and are not included in the evaluation design.

Each chapter includes a logic model that illustrates the relationships between policy inputs, implementation activities, outputs, and outcomes for a specific policy domain. We recognize that these policy domains and their overlapping components are designed to work together to achieve the overall goals of the Demonstration. In Figure 1-1, the overarching Demonstration Logic Model summarizes the process by which the Demonstration goals informed several policy initiatives designed to jointly affect a common set of outputs and ultimate outcomes. As illustrated in Table 1-1, for example, continuous eligibility, a component of the Coverage and Eligibility policy domain (Chapter 2, Coverage and Eligibility), is also key to the success of the Demonstration goals of improving access to high-quality care and improving health equity. Likewise, the Delivery System Reform policies (Chapter 3, Delivery System Reform), most notably the MassHealth ACOs, are directly linked to accountability for safety net hospitals (Chapter 5, Safety Net Care Pool) and all acute care hospitals participating in the Hospital Quality and Equity Initiative (Chapter 7, Hospital Quality and Equity Initiative). The ACOs have a lead role in implementing HRSN programs (Chapter 8, Health-Related Social Needs), while ACOs share HRSN screening and data reporting requirements with hospitals participating in the HQEI. Policies to promote recruitment and retention of a robust community-based primary care and BH workforce (Chapter 6, Workforce Initiatives) will support the safety net practice sites, hospitals, and community-based organizations (many of whom will be part of or contracted with the ACOs) responsible for delivering integrated and accountable care across the continuum. The alignment and joint effects of these policies across domains will be critical to the success of the Demonstration goals related to expanding access to primary care, Behavioral Health (Chapter 4, Behavioral Health), and pediatric services while supporting the Commonwealth's safety net and continuing to move the system away from a siloed FFS model.

Figure 1-1: Demonstration Logic Model

Connecting 1115 Demonstration Waiver Policies to Demonstration Goals and Desired Outcomes



*Parentheticals indicate whether policies in each domain are continuing unchanged, revised and continuing, and/or are new since the prior 2017-2022 Demonstration period.

1.4. Summary of the Evaluation Design, Data Sources, and Limitations

The body of the EDD addresses the evaluation of the seven policy domains. Each chapter begins with an introductory section providing background and context for the policy domain before describing the policy domain logic model, evaluation research questions, and evaluation plans. The domain chapters also include information on the impacted population or study groups and appropriate comparison groups, along with the measures, data sources, and analytic approach for evaluating that policy domain. For each research question, the most appropriate qualitative, quantitative, and mixed methods approach will be deployed. The domain chapters also highlight the limitations of the evaluation related to data availability, comparison populations, and potential confounding factors.

The evaluation plans for each policy domain have been designed to account for the variable timing of policies and program implementation. Implementation timelines for the policy components of the policy domains are described in Chapters 2 through 8. After describing the cross-domain data sources and analytical approaches below, we offer our perspective on the potential limitations of the evaluation design for making causal inferences, including the impact of overlapping policies.

1.4.1. Summary of Data Sources

This section summarizes the data needed for the evaluation, including traditional administrative data, program-specific data, publicly available data, document review data, key informant interviews (KII), case studies, and survey data. The methods used to evaluate specific policy domains and components will be addressed in subsequent EDD Domain chapters.

Table 1-2 summarizes the data sources that will be used to evaluate the seven Demonstration policy domains. Table 1-3 illustrates the timeline for data collection, management, and analysis during the Demonstration.

Table 1-2: Summary of Data Sources by Policy Domain

	C&E Domain	DSR Domain	BH Domain	SNCP Domain	WI Domain	HQEI Domain	HRSN Domain
1. Traditional Administrative Data Sources:							
1a. MassHealth Member Eligibility and Enrollment	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1b. MassHealth Claims & Encounters	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1c. MassHealth Provider File	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1d. All-Payer Claims Data	No	No	Yes	No	No	No	No
2. Program-specific Data Sources:							
2a. Accountable Care Organization	No	Yes	Yes	No	No	Yes	Yes
2b. Flexible Services Program	No	Yes	No	No	No	Yes	Yes
2c. Hospital Quality and Equity Initiative Enhanced Demographics Files	No	No	No	No	No	Yes	Yes
2d. Coverage & Eligibility Program Enrollment	Yes	No	No	No	No	No	No
2e. Specialized Community Support Programs	No	Yes	Yes	No	No	Yes	Yes
2f. Workforce Initiative Program	No	No	No	No	Yes	No	No
3. Publicly Available and Other Data Sources:							
3a. Massachusetts Death Records	No	No	Yes	No	No	No	No
3b. American Community Survey	Yes	No	No	No	No	No	No
3c. Uncompensated Care Reports	No	No	No	Yes	No	No	No
3d. Program-Specific Enrollment Data	Yes	No	Yes	Yes	Yes	No	No
3e. National Survey on Drug Use and Health	No	No	Yes	No	No	No	No
3f. Behavioral Risk Factor Surveillance System	No	No	Yes	No	No	No	No
3g. National Mental Health Services Survey	No	No	Yes	No	No	No	No
3h. National Survey of Substance Abuse Treatment	No	No	Yes	No	No	No	No
3i. Opioid Overdose Data	No	No	Yes	No	No	No	No
4. Qualitative Data Sources:							
4a. Document Review	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4b. Key Informant Interviews, Focus Groups, or Case Studies	Yes	Yes	Yes	Yes	Yes	Yes	Yes

	C&E Domain	DSR Domain	BH Domain	SNCP Domain	WI Domain	HQEI Domain	HRSN Domain
4b-1. Representatives of Participating Entities: Entities include Accountable Care Organizations, Community Partners, Practice Sites, Hospitals, and Social Services Organizations – See Section 1.4.3 KI Interviews	No	Yes	Yes	Yes	Yes	Yes	Yes
4b-2. State Staff	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4b-3. MassHealth Members	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5. Survey Data Sources:							
5a. Accountable Care Organization Provider & Community Partner Staff Survey	No	Yes	No	No	No	No	No
5b. Practice Site Administer Survey	No	Yes	No	No	No	No	No
5c. Member Surveys	No	Yes	Yes	Yes	No	Yes	Yes
5d. Workforce Survey	No	Yes	Yes	No	Yes	No	No
6. Other Data							
6a. Other data sources include: Bureau of Substance Abuse Services Program Data, CDC Wide-ranging Online Data for Epidemiologic Research (WONDER), and the Massachusetts Department of Public Health's Public Health Data Warehouse – See Chapter 4 (Behavioral Health).	No	No	Yes	No	No	No	No

Table 1-3: Anticipated Timeline for Data Collection, Management, and Analysis, MassHealth Demonstration Project

Key: Initiation of activity= X, Continuation of activity=c, No activity= – Note: The actual timeline will be updated in accordance with the approval date of the EDD by CMS

State Fiscal Year	**23 Q1**	**23 Q2**	**23 Q3**	**23 Q4**	**24 Q1**	**24 Q2**	**24 Q3**	**24 Q4**	**25 Q1**	**25 Q2**	**25 Q3**	**25 Q4**	**26 Q1**	**26 Q2**	**26 Q3**	**26 Q4**	**27 Q1**	**27 Q2**	**27 Q3**	**27 Q4**	**28 Q1**	**28 Q2**	**28 Q3**	**28 Q4**	**29 Q1**	**29 Q2**
Calendar Year	**22 Q3**	**22 Q4**	**23 Q1**	**23 Q2**	**23 Q3**	**23 Q4**	**24 Q1**	**24 Q2**	**24 Q3**	**24 Q4**	**25 Q1**	**25 Q2**	**25 Q3**	**25 Q4**	**26 Q1**	**26 Q2**	**26 Q3**	**26 Q4**	**27 Q1**	**27 Q2**	**27 Q3**	**27 Q4**	**28 Q1**	**28 Q2**	**28 Q3**	**28 Q4**
Demonstration Project	X	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	–	–	–	–	–	–
Develop Key Informant (KI) Individual or Group interview protocols	–	–	–	–	–	X	c	–	–	X	c	–	–	X	c	–	–	X	c	–	–	–	–	–	–	–
KI interview protocols and documents to MassHealth for review	–	–	–	–	–	–	–	X	c	–	–	X	c	–	–	X	c	–	–	X	c	–	–	–	–	–
Respond to emerging foci for in-depth KI interviewing via protocol development and data collection	–	–	–	–	–	–	–	–	X	c	c	c	c	c	c	c	c	c	c	c	c	–	–	–	–	–
Schedule and perform KI interviews	–	–	–	–	–	–	–	–	X	c	c	c	c	c	c	c	c	c	c	c	c	c	–	–	–	–
Transcribe, code, and analyze KI interview text	–	–	–	–	–	–	–	–	–	X	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c
Design CP staff and provider survey	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	c	–	–	–	–	–	–	–	–
CP survey protocols and documents to MassHealth for review	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–
Administer CP survey	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	c	–	–	–	–	–	–
Analyze CP survey	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	X	c	c	c	c	c
Design Practice Site Administrator (PS Admin) survey	–	–	–	–	–	–	X	c	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
PS Admin survey protocols and documents to MassHealth for review	–	–	–	–	–	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Administer PS Admin survey	–	–	–	–	–	–	–		X	c	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Analyze PS Admin survey	–	–	–	–	–	–	–	–	–	–	X	c	c	c	c	c	c	c	–	–	–	–	–	–	–	–
Provide input for development of Member survey	–	–	X	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Survey Member vendor fields surveys	–	–	X	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	–	–	–	–
Receive data from Member survey	–	–	–	–	–	X	–	–	–	X	–	–	–	X	–	–	–	X	–	–	–	X	–	–	–	X
Analyze Member survey data	–	–	–	–	–	–	X	c	–	–	X	c	–	–	X	c	–	–	X	c	–	–	X	c	–	–
Design WI survey	–	–	–	–	–	–	X	c	c	c	–	–	–	–	X	c	c	c	–	–	–	–	–	–	–	–
WI survey protocols and documents to MassHealth for review	–	–	–	–	–	–	–	X	c	c	–	–	–	–	–	X	c	c	–	–	–	–	–	–	–	–
Administer WI survey	–	–	–	–	–	–	–	–	–	–	X	c	–	–	–	–	–	–	X	c	–	–	–	–	–	–
Analyze WI survey	–	–	–	–	–	–	–	–	–	–	–	–	X	c	c	c	c	c	–	–	X	c	c	c	c	c

1.4.2. Quantitative Data

For programs implemented during MassHealth's 2017-2022 Demonstration and continuing in the 2022-2027 Demonstration, data from January 2015 through December 2022 will be considered. Specific study periods will be customized to reflect implementation timelines: for delivery system reform, we generally plan to use calendar years (CY) 2015 through 2017 as a pre-implementation baseline, 2018 through 2022 as the first phase of implementation, and 2023 through 2027 as the current Demonstration period of interest. For new programs being implemented during the 2022-2027 Demonstration, we expect to use more recent data (e.g., 2018-2022) as a baseline, as appropriate, with consideration given to the impact of the COVID-19 pandemic. In each of the Research Questions and Hypotheses tables within each domain chapter, we have specified the expected evaluation periods for each data source and research question. We have listed approximate sample sizes for surveys (i.e., those who will be invited to take the survey) and population sizes for analyses of administrative data that include all eligible members of a population. Time periods and sample sizes will be updated as needed in the methods sections of the Independent Evaluation Interim and Summative Reports.

Text descriptions and summary tables describing the target population(s), data sources, outcome measures, and planned analytic approaches for each policy domain are included in policy domain chapters, as are comparison groups when appropriate. Technical specifications for all quantitative measures to be derived from existing data sources are detailed in Appendix B.

Traditional Administrative Data

Medicaid administrative data from the Medicaid Management Information System (MMIS) and MassHealth Data Warehouse will be used by the IE team to conduct analyses for the evaluation. Working with its contractors, MassHealth routinely conducts extensive quality checks and provides CMS with annual data quality reports on its MMIS data. This administrative data is the most integrated and comprehensive, and since it is available as part of the routine administration of the Medicaid program, there is no additional burden to members, providers, and other stakeholders when using it for evaluation. Data in MMIS and the Data Warehouse are used in program administration, including tracking program eligibility for members and providers, setting rates, paying providers, and monitoring trends in utilization and costs.

The IE is familiar with MMIS and Data Warehouse data through a longstanding collaboration with MassHealth on projects, including the independent evaluation of MassHealth's 2017-2022 Demonstration. Administrative data relating to traditional services and benefits data includes:

- Member Eligibility and Enrollment: These files contain dates when a member is enrolled in or receives benefits from various programs, such as when they are a client of the Massachusetts Department of Mental Health (DMH) or enrolled with a specific ACO or other health plan. MMIS reads and interprets data from the state's Health Insurance Eligibility Verification Database and from other state agencies.

Enrollment data will be collected on individuals in specific programs (e.g., those in an employer-sponsored insurance program, CommonHealth 65+, Health Connector subsidies).

- Claims and Encounter Records Stored in the Data Warehouse: Both kinds of records use the same format and are regularly checked for completeness and accuracy. These records contain information about utilization and services rendered by whom and in what location, members' diagnoses, and costs. In addition to their use for rate setting and settlement, they support the calculation of total costs of care and cost within healthcare service categories, such as hospital admissions, ambulatory care, Emergency Department (ED) visits, and Long-Term Services and Supports (LTSS). Supports delivered by BH and LTSS Community Partners (CPs) are also captured in encounter records.
- Providers: These data include the National Provider Identifier, the provider type and specialty, and, for primary care doctors, the health plan with which they are affiliated. These data are collected as part of the process for being accepted as a Medicaid provider.

It is important to note that there are significant limitations in the member demographic data in MMIS; for example, only 40 to 50 percent of members report their race and ethnicity as part of their MassHealth application process, and "limited English proficiency" and "homelessness" were rarely coded. MassHealth has increased its focus on demographic data (see Chapter 6 ,Workforce Initiatives), including incorporating Z-codes related to homelessness (Z59.01, Z59.02) into the risk adjustment model in 2017. This led to an increase in the use of those codes. More recently, MassHealth has begun efforts to improve the completeness of its race and ethnicity data in its Data Warehouse.

Program Specific Data

In cases where administrative data is insufficient, UMass Chan will utilize additional data to supplement the evaluation. For example, there will be new or augmented data streams relating to the Flexible Services Program (FSP), the Hospital Quality and Equity Initiative (HQEI), and Primary Care payment reform. While some relevant data specifications and workflows are still being finalized, the current assessment of what data will be available is described below. More details of programmatic data will be included in specific policy domain chapters.

- ACO Data: We will supplement claims and encounter data use with data from other sources when evaluating quality and costs of care in the ACO program. In addition to programmatic documentation submitted to MassHealth (e.g., participation plans for ACO FSPs), ACOs submit member-level data consistent with quality measure specifications for hybrid quality measures (e.g., blood pressure, HbA1c) and to meet program requirements. MassHealth will also have practice site data on the clinical service delivery tier as part of the primary care sub-capitation program that will be made available for the evaluation.
- Flexible Services Data: Both housing and nutritional FSP data currently lie outside the scope of traditional claims and encounter data but may be incorporated into claims and encounters during the latter years of the Demonstration period. As of the

start of the Demonstration, ACOs will report to MassHealth lists of members receiving Flexible Services by type of service, risk factor, and health needs-based criteria and associated conditions qualifying the individual for services, household level data (if receiving allowable nutritional supports for the household), plus baseline and follow-up data on self-reported mental and physical health, food insecurity (if receiving nutritional supports) and their housing situation (if receiving housing supports).

- HQEI Data: MassHealth will incentivize the collection of self-reported data on demographics and HRSNs. Participating hospitals will be responsible for reporting demographic and HRSN data to MassHealth in a unified way. Participating hospitals also will report on quality and equity measures to measure progress in improving access to care and reducing disparities. Finally, hospitals will be assessed on their ability to meet rigorous standards for service capacity, access, and culturally and linguistically appropriate care, including those outlined by The Joint Commission (TJC).
- Workforce Initiative Data: Workforce Initiative (WI) program data, including applicants, awardees, and other information (e.g., service obligation compliance) will be obtained from MassHealth or its program managing partner.
- Specialized Community Support Program for Justice-Involved (CSP-JI) Data: the specialized CSP for Individuals with Justice Involvement (CSP-JI) providers that are also Behavioral Health Supports for Justice-Involved Individuals (BH-JI) providers, per the BH-JI Contracts, submit monthly lists of referred and enrolled members to MassHealth. These lists will include the following data that are not redundant to other MassHealth data collection efforts, such as demographics, referral source, enrollment date, disenrollment date, the reason for disenrollment, and housing and employment status at enrollment.

Publicly Available and Other Data

The following publicly available survey data will be used: the American Community Survey (ACS), the National Survey on Drug Use and Health (NSDUH), the Behavioral Risk Factor Surveillance System (BRFSS), the National Mental Health Services Survey, and the National Survey of Substance Abuse Treatment. UC reports (containing cost data from Medicare cost reports, in addition to data provided by MassHealth on supplemental payments to safety-net hospitals) will be analyzed. Massachusetts death records will be analyzed along with Bureau of Substance Abuse Services (BSAS) data and state data on opiate overdoses collected in the Public Health Data Warehouse and overseen by the Massachusetts Department of Public Health (DPH) will be used, if available. The BH domain may use data from the All-Payer Claims Database (APCD) maintained by the Center for Health Information and Analysis (CHIA), an independent state agency. We expect to use data from the Hospital Cost and Utilization Project (HCUP) for the HQEI domain.

1.4.3. Qualitative Data

Document Review

A range of existing documents (e.g., FSP participation plans, state-generated reports on funding allocations, HQEI reports submitted by hospitals) are expected to provide data on participating entities' plans and progress in implementing Demonstration programs. Additional documents reflecting change or innovation in the delivery system or other program/policy context will be inventoried and reviewed, for example, as was essential during the COVID-19 pandemic.

Key Informant Interviews (KIIs)

Interviews will be conducted with at least three groups of stakeholders at two points in the Demonstration period. Sample sizes are specified for each group in each domain chapter as the number of interviewees (i.e., total number of participants, not interviews). Interviews may be conducted with individuals and in focus groups, within and across organizations and roles, and will include:

- Representatives of participating entities (e.g., administrative and program staff from ACOs, CPs, Social Service Organizations (SSOs), staff from participating hospitals, primary care practices, safety net providers, community health centers (CHCs), and justice entities) to assess the process of implementing investments, progress developing and adapting essential organizational infrastructure, capacity, and procedures to promote integrated and accountable care, and perceived effectiveness of state actions to support transformation, among other topics.
- A range of MassHealth personnel responsible for various aspects of the Demonstration will be interviewed to understand the implementation of the policy domains from the state's perspective.
- MassHealth members will be interviewed to, among other things, understand how they experience the process and impact of, and satisfaction with delivery system transformation (e.g., care coordination and integration processes, the identification and meeting of HRSN, efforts to address health disparities) and experience of transitions of care upon discharge from treatment services delivered in an Institute for Mental Diseases (IMDs).

In-depth interviews and/or focus groups with personnel from ACOs, CPs, and other relevant entities (e.g., hospitals, primary care practice sites, etc.) and/or with individuals in selected roles (e.g., care coordinators, members) will be conducted to obtain a more nuanced understanding of how the Demonstration is operating; to integrate perspectives from multiple, diverse sources; and/or to explore ways in which emerging contextual issues contribute to systems transformation. These in-depth interviews will allow the IE to pursue topics of interest that emerge in initial KIIs or are drawn from context-related developments (e.g., the COVID-19 pandemic in the past Demonstration evaluation). Several potential foci of in-depth interview data collection include: (1) to examine a sub-sample of entities as they implement organizational change (i.e., adopt core ACO and CP competencies, develop and adapt essential partnerships to support coordinated, integrated care) as compared with a different sub-sample of entities; and

(2) to study participating entities, staff, and/or member groups, selected from across entities to address specific evaluation questions, explore further needs, suggest remedies, and provide examples of innovation and success. As elaborated in subsequent domain chapters, in-depth interviews regarding new target populations or initiatives will be particularly informative as efforts are implemented to meet new or emerging needs.

1.4.4. Survey Data

Member Experience Surveys

MassHealth has worked with Massachusetts Health Quality Partners (MHQP), a survey vendor, to annually field six Member Experience Surveys (MES) for ACO members since 2018 and a primary care survey for members enrolled in MassHealth's Primary Care Clinician (PCC) plan. Distinct surveys for adults and children address three populations defined by service categories: Primary Care, BH, and/or LTSS. Members are included in sample frames based on their service utilization during a given measurement period, typically a calendar year. MHQP takes random samples of members in the sample frame and determines which survey a given member will receive (Primary Care, BH, or LTSS); a given household does not receive more than one survey.

MassHealth's Primary Care MES is based on the MHQP-adapted Clinician and Group Consumer Assessment of Healthcare Providers and Systems (CG-CAHPS). The BH and LTSS surveys were developed by the Massachusetts Executive Office of Health and Human Services (EOHHS) in 2018 through workgroups, which included subject matter experts (SMEs), stakeholder input, and focus groups of both providers and consumers. The domains and questions were identified, assessed, and selected by the workgroup from existing surveys, including the MassHealth One Care survey (of dual eligible members), the Massachusetts DMH Consumer Survey, and the BRFSS. Additional customized questions were developed and tested with members through cognitive testing and piloting of the surveys. The surveys were fielded using multiple modalities, including paper and email. In addition, the telephone was utilized to survey members receiving LTSS services. Members were surveyed between the first and second quarters following the measurement year (e.g., February–May). It is anticipated that the surveys will continue to be fielded annually for measurement years 2023-2027 for the new Demonstration by MassHealth's vendor. The survey cycle timing is anticipated to be similar to prior years, although options for more rapid survey cycles or enhanced modalities may be considered.

Practice Site Administrator Survey

Two waves of online surveys of ACO primary care practice site administrators were performed during MassHealth's 2017-2022 Demonstration and will provide baseline data for a single online survey of practice site administrators to be conducted during the first half of the evaluation of MassHealth's 2022-2027 Demonstration. The sampling frame will again include group practices, CHCs, and hospital practices participating in the ACO program. The following sites will be excluded from the survey: solo physician practices, sites that only provide acute care, practice sites located outside of

Massachusetts, sites with fewer than 50 MassHealth members, and sites with an unknown number of MassHealth members. From within the sampling frame, we expect all sites within each ACO will be selected.

After a thorough literature review, the questionnaire used for the survey in the 2017-2022 evaluation was drafted collaboratively by the Independent Assessor, IE, and a research group administering similar surveys. The survey was shared with stakeholders to gather feedback, field-tested with ACO administrators, and further refined before administration. The survey instrument includes questions about care integration, screening, access, social services referrals, risk stratification, performance management, engagement with the ACO, and payment arrangements, among other topics. The survey instrument for the 2022-2027 evaluation is expected to be a modified version of the instrument used in the 2017-2022 evaluation. For any new survey questions, the questions will be piloted with a convenience sample of practice site administrators using cognitive testing and assessments for clarity, completeness, and respondent burden. We will retire survey questions that are no longer relevant or informative.

Provider and Staff Surveys

Two waves of online surveys of ACO primary care providers (PCPs) and CP staff were performed during MassHealth's 2017-2022 Demonstration and will provide baseline data for one wave of surveys of ACO PCPs and CP front-line staff to be conducted in the second half of the Demonstration period. The survey respondents are expected to be consistent with the sampling frame for the 2022-2027 surveys of ACO/CP providers and staff is expected to be similar to MassHealth's 2017-2022 Demonstration provider and staff survey respondents, including medical doctors (MDs), nurse practitioners (NPs), registered nurses (RNs), physician assistants (PAs), medical assistants (MAs), and community health workers (CHWs).

The survey instrument is expected to be a modified version of the instrument used in the 2017-2022 evaluation. A core component of the instrument is the Provider and Staff Perceptions of Integrated Care (PSPIC), a validated survey instrument comprising 21 questions across seven care integration constructs, including within care team care coordination, across care team care coordination, and coordination between care teams and community resources. It is anticipated that validated survey questions will again be supplemented with questions specifically tailored to the new and modified programs (e.g., perceived effectiveness of CP and FSP). For any new survey questions, the questions will be piloted with a convenience sample of provider staff using cognitive testing and assessments for clarity, completeness, and respondent burden. ACO PCPs will be drawn from the sampling frame of primary care practice sites surveyed in the first half of the Demonstration period. Other details of the sampling plan remain under development and will be informed by pending data (e.g., ACO practice site affiliations and provider distributions).

Workforce Surveys

Two cross-sectional surveys of clinicians who are eligible for WI programs (including those participating and others who could have participated) and prospective clinicians

(students) who will be eligible for Demonstration WI programs will be conducted in SFY25 and SFY27. These surveys will elicit providers' preferences for scenarios of financial and non-financial incentives to meet the workforce development initiative objectives using a conjoint design. A conjoint analysis tool will be developed according to recommendations from the International Society for Pharmacoeconomics and Outcomes Research.[3] The survey will be administered online and include a lottery voucher of three gifts for those who complete the survey. The survey will be field-tested and modified as needed. The survey will also explore participating clinicians' experiences with the WI programs. Details of the survey are described in Chapter 6 (Workforce Initiatives).

1.5. Evaluation Limitations

This section discusses limitations inherent in evaluating the multiple public policies and programs enabled by the 2022-2027 Demonstration. Individual Demonstration activities overlap in time, will occur in the presence of (likely large, but currently unknown) secular change, and will affect various subsets of a large and diverse Medicaid population. There will be no randomized controls to compare observed changes to what would have happened absent these programs. In this context, our Evaluation is designed to accurately describe the changes that occurred and to use both analytic methods and qualitative fact-finding to shed maximal light on program effectiveness, while acknowledging the fundamental fact that true causal inference regarding the effects of specific Demonstration components will be challenging.

Broadly, our analytic approach will be to exploit naturally occurring variation in policy exposure over time (before and after implementation) and between groups (that were differentially exposed) to estimate policy effects. However, there will be limited opportunity to estimate the effect of some programs. For example, it will be difficult to estimate the effect of programs that are offered continuously and without baseline data to entire populations (with no control population left unserved). It will also be a challenge to estimate the effect of one program when there are multifaceted programmatic efforts that cannot be isolated. Comparisons within individuals over time without a comparison group are at risk of bias from time-varying confounding (e.g., from secular trends) and regression to the mean, while comparisons between groups without baseline data cannot distinguish policy effects from pre-existing between-group differences.

Due to systematic differences between Medicaid members and commercial enrollees and between interstate policy environments, we plan to primarily draw comparison groups from within the MassHealth program while also exploring opportunities to obtain and leverage data from other Medicaid programs. Accessing individual-level member data from other states is challenging due to privacy and security rules, unique considerations with each state's data structure and quality, capacity constraints and competing priorities for Medicaid staff, and requirements that sharing such data produces information that is deemed important to the other state sharing data. We will

[3] Bridges, J.F.P., Hauber, A.B., Marshall, D., Lloyd, A., Prosser, L.A., Regier, D.A., Hood, F.R., & Mauskopf, J. (2011). Conjoint Analysis Applications in Health – a Checklist: A Report of the ISPOR Good Research Practices for Conjoint Analysis Task Force. Value in Health. 14: 403-413

explore the feasibility of creating synthetic controls from other states with the most similar policy environments using aggregated and publicly available data. However, aggregate data may not be publicly available for many measures. Moreover, the appropriateness of a synthetic control approach is uncertain because Massachusetts has a unique policy environment and a healthcare system that falls in the tails of the distribution (i.e., either above or below most other states) for coverage, delivery system reform efforts, cost, and quality. This raises concerns that a pool of other states cannot satisfy assumptions of the method needed to represent a true counterfactual and may introduce interpolation bias.[4]

Concurrent non-Demonstration-related policy changes at the state and federal levels will introduce time-varying confounding. The Massachusetts Roadmap for Behavioral Health Reform (BH Roadmap), for example, is a multi-year plan with a range of activities designed to make outpatient treatment more accessible for all residents with BH conditions. We expect to see improved access, treatment, and outcomes for MassHealth members with BH conditions, and note that the state's implementation of the BH Roadmap (with certain major components starting in January 2023) will impact our ability to identify the effects of Demonstration activities targeting the same population. We will use qualitative methods, including interviews with program administrators and program recipients, to mitigate this fundamental limitation.

Public health challenges and policy responses to the COVID-19 pandemic are another source of time-varying confounding. Throughout the federal Public Health Emergency (PHE), for example, many organizations have experienced financial, workforce, and technology challenges affecting their performance. MassHealth enrollment increased throughout the PHE due to the continuous enrollment provision of the Families First Coronavirus Response Act, helping many members maintain continuous coverage. The Consolidated Appropriations Act, 2023 detached the continuous enrollment provision from the PHE as of April 1, 2023, requiring redeterminations of member eligibility to maintain enrollment. Program membership is expected to decline during PHE "eligibility unwinding" as members are redetermined, and the resulting effects on the experience of continuing members will be difficult to disentangle from the effects of Demonstration coverage and eligibility policies. Changes in the enrolled member population are not random and introduce confounding into longitudinal analyses that may only partially be addressed analytically when evaluating other Demonstration policies. It is particularly challenging to isolate and evaluate coverage and eligibility policies in the context of the unwinding time period. This evaluation will capture the trend of changes, including utilizing pre-PHE data as a baseline to minimize the bias of estimates impacted by PHE.

Finally, we recognize that certain data sources used for evaluation activities are subject to uncertainty regarding availability. Each data source has its own potential sources of bias, which will be discussed in the relevant chapters.

[4] Abadie, Diamond, and Hainmueller: Synthetic Control Methods for Comparative Case Studies. Journal of the American Statistical Association (June 2010). Vol. 105, No. 490 McClelland R, Gault S. The Synthetic Control Method a Tool to Understand State Policy. Urban Institute. March, 2017.

1.6. EDD Timeline, Milestones, Deliverables and Budget

Key milestones and deliverables for the evaluation are mapped out in Table 1-4. The draft IEIR is due to CMS by December 31, 2026. The IEIR will include primary data collected through CY2025 and secondary data through CY2024. The IEIR will primarily be focused on addressing research questions regarding the implementation of new policies and descriptive analyses of changes in processes, outcomes, and costs over time. The draft Independent Evaluation Summative Report (IESR) is due to CMS by June 30, 2029 and will address all research questions and analyses specified in the evaluation design. The draft Evaluation Budget and Budget Narratives are included in Attachment 1.

*Table 1-4: Independent Evaluation Timeline, Milestones, and Deliverables**

* Delivery of final document or report contingent on receipt of CMS feedback.

Key: Date of Milestone or Deliverable = D; Time period that Demonstration is active = X; No activity = –

State Fiscal Year	**23 Q1**	**23 Q2**	**23 Q3**	**23 Q4**	**24 Q1**	**24 Q2**	**24 Q3**	**24 Q4**	**25 Q1**	**25 Q2**	**25 Q3**	**25 Q4**	**26 Q1**	**26 Q2**	**26 Q3**	**26 Q4**	**27 Q1**	**27 Q2**	**27 Q3**	**27 Q4**	**28 Q1**	**28 Q2**	**28 Q3**	**28 Q4**	**29 Q1**	**29 Q2**	**29 Q3**	**29 Q4**	**30 Q1**	**30 Q2**
Calendar Year	22 Q3	22 Q4	23 Q1	23 Q2	23 Q3	23 Q4	24 Q1	24 Q2	24 Q3	24 Q4	25 Q1	25 Q2	25 Q3	25 Q4	26 Q1	26 Q2	26 Q3	26 Q4	27 Q1	27 Q2	27 Q3	27 Q4	28 Q1	28 Q2	28 Q3	28 Q4	29 Q1	29 Q2	29 Q3	29 Q4
Demonstration	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	–	–	–	–	–	–	–	–	–	–
Submit EDD to CMS 4/14/23	–	–	–	D	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Submit revised EDD to CMS 12/4/23	–	–	–	–	–	D	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Draft IEIR to CMS 12/31/26	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	D	–	–	–	–	–	–	–	–	–	–	–	–
Final IEIR 60d after CMS feedback*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	D	–	–	–	–	–	–	–	–	–	–	–
Draft IESR to CMS 6/30/29	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	D	–	–
Final IESR 60d after CMS feedback*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	D	–
Draft Close Out Report to CMS 4/30/28	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	D	–	–	–	–	–	–
Final Close Out Report to CMS	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	D	–	–	–	–	–	–	–

2. Coverage and Eligibility

2.1. Overview of Coverage & Eligibility (C&E) Policy Domain

Massachusetts continues to lead the nation with near-universal health insurance coverage. Only 2.4 percent of residents in the Commonwealth were uninsured in 2021, well below the national rate of 9.2 percent.[5] During the COVID-19 Public Health Emergency (PHE) period, Medicaid enrollment peaked because MassHealth implemented the continuous coverage provision of the Families First Coronavirus Response Act (FFCRA) to allow individuals not to lose coverage or have a decrease in benefits during this period except for special circumstances.[6]

2.1.1. Policy Domain Goals

With the 2022-2027 Demonstration, the Commonwealth seeks to continue programs begun under previous Demonstrations as well as implement new ones with the goals of (1) Increasing insurance coverage and access; (2) Improving health outcomes; and (3) Maintaining the sustainability of Medicaid resources.

2.1.2. C&E Policy Domain Components and Desired Outcomes

The policy components center on continuous eligibility (CE) policies (to cover individuals for a longer period), policies to cover more populations, premium assistance and cost-sharing policies, and waiver of retroactive eligibility (RE) policies, alongside several continuing policies from the prior Demonstration period.

Continuous Eligibility (CE) Policies

Coverage for a Longer Period

MassHealth will introduce new CE programs for justice-involved individuals and those experiencing homelessness that will limit churn (defined as the temporary loss of coverage in which beneficiaries are disenrolled from and reenrolled in MassHealth within 12 months) and reduce verification procedures to once every 12 months. Special Terms and Conditions (STCs) 4.11 and STC Attachment O[7] (the CE Implementation Plan) describe the requirements for annual verification and beneficiary contact information updates for these two populations.

Beginning in April 2023, justice-involved individuals who are Medicaid eligible and under 65 years of age will be continuously eligible for coverage during the 12 months following their release from correctional settings, regardless of income or other changes that would affect eligibility. Individuals who are experiencing homelessness, qualify for Medicaid, are under 65 years of age, and have a confirmed status of homelessness for at least six months will be continuously eligible for coverage for 24 months, regardless

[5] CHIA. *Massachusetts Health Insurance Survey*. (n.d.). *Massachusetts Health Insurance Survey*. Chiamass.gov. Retrieved January 01, 2023, from https://www.chiamass.gov/massachusetts-health-insurance-survey/

[6] Commonwealth of Massachusetts. (2020, August) *MassHealth Eligibility Flexibilities for COVID-19*. Mass.gov. Retrieved February 20, 2023, from download (mass.gov)

[7] Attachment O. Continuous Eligibility Implementation Plan; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

of income or other changes that would affect eligibility. Further details about both programs are available in STC 4.10.

Coverage of More Populations

To maintain near-universal health insurance coverage and improve insurance access, MassHealth will continue or expand coverage eligibility to several populations through three programs. First, MassHealth will continue the CommonHealth program with two modifications in this Demonstration period. Qualifying non-working adults (19-64 years of age) with total and permanent disabilities will no longer be required to pay a one-time deductible.[8] Additionally, disabled adults over 65 years of age who have had CommonHealth for 10 or more years will retain coverage regardless of their work status.[8]

MassHealth will continue the Breast and Cervical Cancer Demonstration Program (BCCDP), whereby individuals are determined financially eligible if they have income between 133.1 percent and 250 percent of the Federal Poverty Level (FPL). Eligibility may be determined by qualified hospitals' data,[9] data hub verification,[10] or self-attestation.[10]

Family assistance programs for children (non-disabled children with incomes between 150 percent and 300 percent of the FPL who are insured at application) and people with HIV/AIDS[11] (individuals with HIV not otherwise eligible with income between 133 percent and 200 percent of the FPL) will continue in this Demonstration.[12]

In addition, the expansion of the Medicare Savings Program (MSP) has increased the income limit for MSP benefits (i.e., Medicare Part B premium) without an asset test to MassHealth Standard members of any age with income up to 165 percent of the FPL.[13] This policy was approved on August 11, 2022, as part of the amendment to the 2017-2022 Demonstration, effective on September 1, 2022; the policy continues through the current Demonstration.

Premium Assistance and Cost-Sharing Policies

MassHealth is committed to providing flexibility in coverage access by providing premium assistance, cost-sharing, and marketplace subsidies, as described in STC 8.12 Premium Assistance, STC 9 Cost-Sharing, and STC 10 Marketplace Subsidies. These programs are described below.

As set forth in STC 8.12, all MassHealth-eligible individuals in Standard, CarePlus, Family Assistance, or CommonHealth may receive Premium Assistance to support

[8] STC Table 3 "CommonHealth Adults" ; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[9] STC 4.6; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[10] STC 4.7, 4.8; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[11] STC 4.8; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[12] STC 5.7, 5.7.a, 5.7.b; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[13] Centers for Medicare & Medicaid Services. (August 11, 2022). *Amendment of 1115 MassHealth Demonstration: STC, page 106.* Mass.gov.: download (mass.gov)

enrollment in cost-effective private insurance such as employer-sponsored insurance (ESI) that meets the basic benefit level (BBL). MassHealth will provide wraparound services to ensure these individuals receive no less coverage than they should have through their MassHealth coverage type.

Under MassHealth's cost-sharing policy (STC 9), specific populations, including children under 21 years of age, pregnant individuals, Native American/Alaska Native members, and individuals with income under 50 percent of the FPL, will not be charged co-pays. Additionally, individuals whose gross income is less than 150 percent of the FPL and Native American/Alaska Native members will not be charged premiums. Attachment C details the "full description of cost-sharing and premiums under the Demonstrations for MassHealth-administered programs" of STC 9.1.[14]

Under STC 10, the Commonwealth will provide Marketplace premium and cost-sharing subsidies for individuals who purchase health insurance through the Health Connector's ConnectorCare program. Eligible individuals are those who (1) are not Medicaid or Children's Health Insurance (CHIP) eligible; (2) have income at or below 300 percent of the FPL; and (3) are eligible for coverage with an Advanced Premium Tax Credit (APTC). Gap coverage for ConnectorCare is supported through the state-operated Health Safety Net (HSN) program. Annual reporting must include the number of individuals served, the size of the subsidies, and a comparison of projected and actual costs.[15]

Waiver of Retroactive Eligibility (RE) Policies

In the 2022-2027 Demonstration period, MassHealth will continue to use the RE Waiver, allowing a period of 10 days of RE prior to the date of application for most individuals. However, individuals who are under 19 years of age or pregnant will instead be eligible for a RE period of 90 days prior to the date of application.[16]

Additional Policies Recommended for Evaluation by CMS

In addition to the C&E policies described above, the Centers for Medicare and Medicaid Services (CMS) recommends evaluating four policies: (1) streamlined eligibility determination, (2) waiver of early and periodic screening, diagnostic, and treatment services, (3) provisional coverage for individuals who self-attest to eligibility, and (4) extended eligibility for out-of-state former foster care youth residing in Massachusetts. The latter two policies were ongoing and included in the 2017-2022 Demonstration evaluation. Reevaluating them is not expected to generate substantial new information, so we do not plan to do so. Below are the descriptions of the first two policies.

Streamlined Eligibility Redetermination

There is a streamlined eligibility redetermination process in this Demonstration whereby certain members who have not had changes in circumstances are not required to

[14] STC 9.1, page 76; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[15] STC 10.1; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[16] STC 4.2, STC 8.13 Table 9; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

submit an annual eligibility form but instead attest to their eligibility. This policy applies to the following groups:

- Families with children under 19 years of age who have gross income, as verified by MassHealth, at or below 150 percent of the FPL and who are receiving Supplemental Nutrition Assistance Program (SNAP) benefits with SNAP-verified income at or below 180 percent of the FPL;
- Families with children under 21 years of age whose SNAP-verified income is at or below 180 percent of the FPL, effective to the extent that the state uses an Express Lane eligibility process under its state plan for children under 21 years of age;
- Childless adults whose SNAP-verified income is at or below 163 percent of the FPL; and
- Families with children, notwithstanding sunset dates for Express Lane Eligibility applicable to the companion state plan amendments.[17]

Waiver of Early and Periodic Screening, Diagnostic, and Treatment Services

As described in STCs 5.3 and 5.6, children under 21 years of age enrolled in MassHealth Standard and CommonHealth are eligible for Early and Periodic Screening, Diagnostic and Treatment (EPSDT) benefits. Under the Waiver of EPSDT, children enrolled in Family Assistance are not eligible for EPSDT.

Desired Outcomes

The policies and programs under the Demonstration provide coverage to new populations and extend the range of coverage to current members. These policies also allow for flexibility of coverage through premium assistance for specific populations enrolled in MassHealth and through subsidies for individuals meeting eligibility requirements to purchase health insurance through the Massachusetts Health Insurance Connector Authority (Health Connector). It is expected that those members now eligible for the 90-day RE will experience less financial burden related to health expenditures.

If implemented effectively, the CE policies are expected to streamline administrative processes around enrollment and eligibility determinations. In turn, it is hoped that the CE policies in the Demonstration will minimize coverage gaps and disruption of services and have a positive impact on the uninsurance rate in Massachusetts.

Through these programs and policies, members may experience improved access to care, increased satisfaction with coverage and services, and an improvement in overall health status. Through better access to insurance coverage, members may maintain or increase their use of primary and preventative care and decrease utilization of emergency or specialty services. These policies are designed to improve members'

[17] STC 4.4; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

health outcomes. Ultimately, improved health status can reduce healthcare utilization and contribute to the sustainability of Medicaid program resources.

2.1.3. C&E Policy Domain Implementation Plan and Timeline

STC Attachment O details the implementation plan regarding CE policies for justice-involved individuals and individuals experiencing homelessness. MassHealth is creating a systematic enrollment process for justice-involved individuals that should be online by July 2024, while a manual process will be available as of April 2023.[18] Similarly, automation of existing processes to verify eligibility for those experiencing homelessness is expected to be in place by December 2023, and CE for those individuals will not be available until that date.[19]

The removal of the RE Waiver for pregnant members and children was effective on October 1, 2022. The MSP expansion was effective on September 1, 2022.

Several other policies will continue from the prior Demonstration, including coverage through MassHealth CommonHealth and Family Assistance programs, BCCDP, premium assistance, cost-sharing, and the waiver of EPSDT for children on Family Assistance.

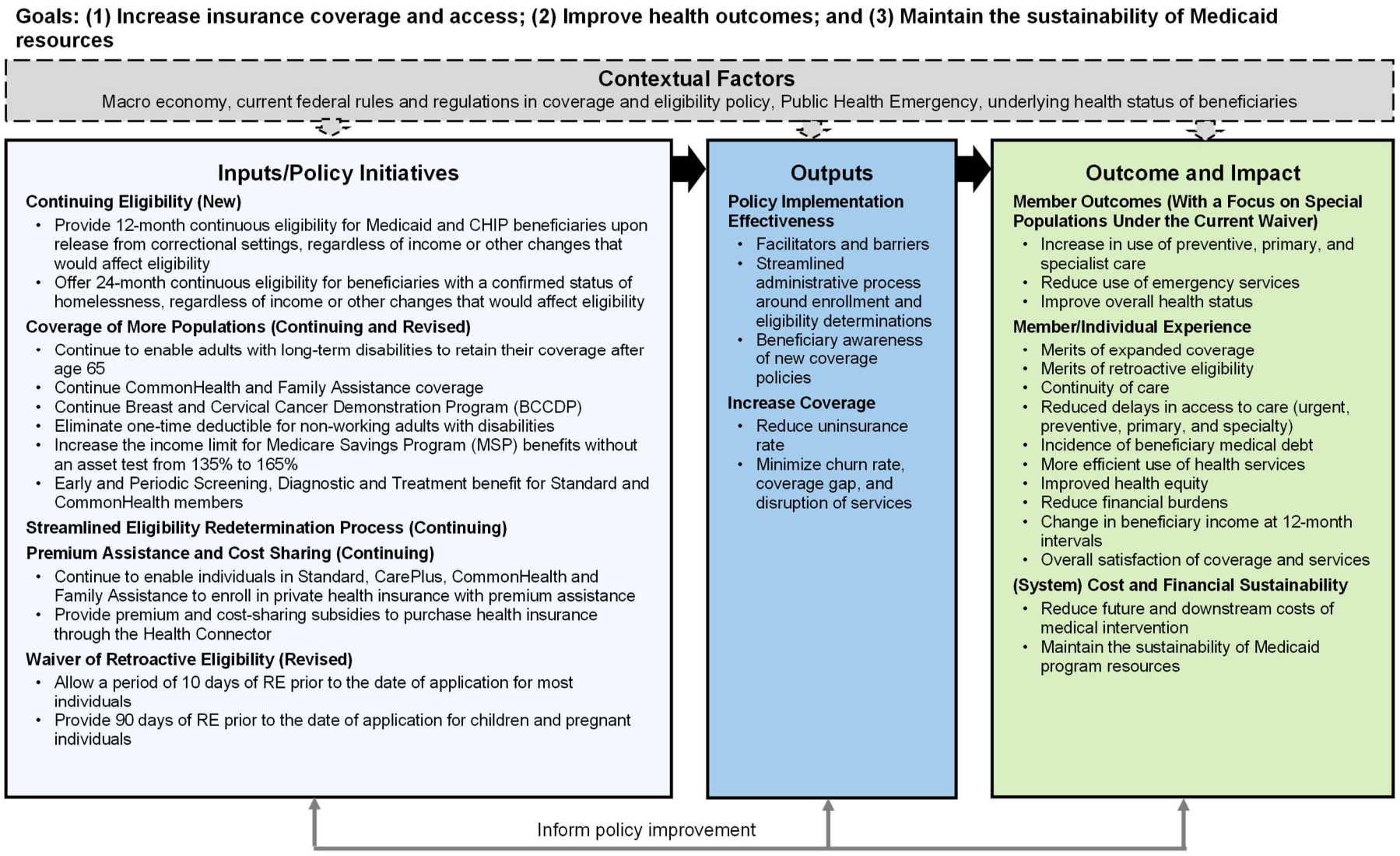
2.2. Logic Model

The C&E logic model in Figure 2-1 links the C&E Demonstration Goals to the Demonstration Inputs, Implementation Activities (e.g., funding pool), Outputs, and Outcomes and Impact (e.g., member access, quality of care, amount of uncompensated care use, and financial sustainability). This logic model guides the research questions (RQs) and hypotheses that follow.

[18] Attachment O. Continuous Eligibility Implementation Plan, page 3; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[19] Attachment O. Continuous Eligibility Implementation Plan, page 4; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

Figure 2-1: Logic Model for the C&E Component of the Demonstration



2.3. Research Questions and Hypotheses

Table 2-1 summarizes the C&E evaluation RQs and associated hypotheses. It includes the study populations, data sources, measures, and analytic methods, detailed in Section 2.4. As guided by the logic model, the RQs explore policy impacts in areas such as MassHealth member enrollment and enrollment continuity and their access to and utilization of healthcare over time.

Table 2-1: Research Questions and Hypotheses for C&E

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
RQ1-1 Have C&E policies collectively maintained Medicaid enrollment and enrollment continuity?	H1-1.1 C&E policies have collectively maintained Medicaid enrollment and reduced churning among MassHealth members. H1-1.2 CE policy for justice-involved and homeless populations has increased coverage and reduced the churn of these populations. H1-1.3 MassHealth enrollment for special populations has been maintained or expanded. H1-1.4 The streamlined eligibility redetermination has increased auto-renewal in Medicaid.	American Community Survey (ACS) (2018 – 2027) Medicaid enrollment and eligibility data; MassHealth programmatic enrollment reports (2018 – 2027); Health Insurance Exchange (HIX) data (2018 – 2027); Qualitative interviews with members (2025, 2027)	Massachusetts residents; MassHealth members (including those with justice involvement or confirmed status of homelessness); MassHealth CommonHealth members; MassHealth Family Assistance members; MassHealth members in the BCCDP program; MassHealth members newly receiving MSP through the MSP expansion; MassHealth members who are auto-renewed during the re-determination process	Number (%) of MassHealth members with a coverage gap 45 days or longer (churning) in one calendar year (CY); Number (%) of MassHealth members who disenrolled and re-enrolled within 12 months; Number of MassHealth members remaining enrolled at the 12th, 18th, and 24th month Number (%) of MassHealth members with 12-month CE upon release from correctional settings (unless they voluntarily disenroll, have moved out of state, are deceased, are enrolled due to agency error or fraud, abuse or perjury attributed to the individual, or become reincarcerated) with a coverage gap of 45 days or longer; Number (%) of MassHealth members eligible for 12-month C&E upon release from correctional settings who remain enrolled at the 18th and 24th month; Number (%) of MassHealth members with a confirmed status of homelessness for at least six months who have maintained 24-month CE (unless they voluntarily disenroll, have moved out of state, are enrolled due to agency error or fraud, abuse or perjury attributed to the individual, or are deceased); Number (%) of MassHealth members with a status of homelessness for at least six months who are eligible	Descriptive statistics (frequency and percentages) (member); Subgroup analysis (member); Thematic analysis (member)

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
				for 24-month CE remain enrolled at the 36th and 48th month Number (%) of MassHealth members in CommonHealth program (by age) over time; Number (%) of MassHealth members in the Family Assistance Program over time; Number(%) of MassHealth members in the BCCDP program over time; Number (%) of MassHealth members newly receiving MSP through the MSP expansion over time; Number (%) of MassHealth members who are auto-renewed in MassHealth during the re-determination process; The level of churn between those auto-renewed and not auto-renewed	
RQ1-2 Have premium assistance and cost-sharing programs supported continued coverage in the Demonstration?	H1-2.1 The enrollment in private health insurance through MassHealth's premium assistance and/or cost-sharing has been maintained.	Medicaid enrollment and eligibility data MassHealth programmatic enrollment reports;	MassHealth members enrolled in private health insurance (e.g., employer-sponsored insurance); Individuals enrolled in ConnectorCare	Number (%) of MassHealth members in Standard, CarePlus, CommonHealth, and Family Assistance receiving premium assistance for ESI over time; Number (%) of individuals enrolled in ConnectorCare through cost-sharing subsidies over time;	Descriptive statistics (frequency and percentages) (member)
RQ1-3 Has RE coverage of 90 days for children and pregnant individuals impacted an individual's	H1-3.1 Increasing the RE coverage from 10 to 90 days for children and pregnant members increased the likelihood of enrollment and enrollment continuity.	MassHealth programmatic enrollment reports (2015 – 2027);	MassHealth members who receive 90 days of RE coverage	Number of children and pregnant Medicaid members by eligibility group and their probability (%) of remaining enrolled in Medicaid for 12-, 18-, and 24-consecutive months	Descriptive statistics (frequency and percentages; interrupted time series) (member)

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
MassHealth enrollment?					
RQ1-4 What is the impact of the RE waiver on the level of medical bills for members subject to the RE waiver?	H1-4.1 Increasing the RE coverage from 10 to 90 days for children and pregnant members will result in a lesser financial burden on those members. H1-4.2 Members subject to the RE waiver of 10-day retroactive coverage will have higher debt levels than MassHealth members and members in states without an RE waiver who receive 90-day retroactive coverage (if feasible to recruit Medicaid members from other states and/or interview with stakeholders)	Qualitative member interviews/focus groups (if data feasible to collect, 2025, 2027); Program staff/stakeholder interviews; Document review	MassHealth members with 10 and 90 days of RE coverage (n ≤ 30); Other states' Medicaid members who receive 90 days or less than 90 days' RE coverage (n ≤ 30, *if feasible*); Stakeholders (e.g., MA and other states' program staff and key informants f (n ≤ 10)	Level of unpaid medical bills at the time of application; Level of third-party payment for healthcare before Medicaid enrollment; Experiences with knowing and benefiting from the policy	Thematic analysis (member & stakeholder)
RQ1-5 Has continuous eligibility streamlined Massachusetts' administrative process for	H1-5.1 Continuous eligibility has streamlined Massachusetts' enrollment and eligibility administrative processes.	Member interviews/focus groups (2025, 2027); Interviews with MassHealth program staff (2025, 2027)	MassHealth members who have gone through eligibility redetermination (n ≤ 30); MassHealth program staff (n ≤ 5)	Member experience in eligibility redetermination and continuity of coverage; Staff's experience with the administrative burden on eligibility review, the processing time of applicants, etc.	Thematic analysis (member, program staff)

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
enrollment and eligibility?					
RQ1-6 Did C&E policies change MassHealth members' healthcare utilization?	H1-6.1 MassHealth members have increased preventive, primary, and medically necessary specialist care. H1-6.2 MassHealth members subject to the new & ongoing C&E policies have reduced emergency and inpatient services.	Medicaid administrative data (2018 – 2027)	MassHealth members subject to the C&E policies	Adult access to preventive/ambulatory health services; Annual primary care visits; Immunization for adults and children; Adolescent well-care visits All-cause inpatient admissions; All-cause Emergency Department (ED) visits; Preventable ED visits; Primary care-sensitive ED visits	Descriptive statistics (frequency and percentages); Interrupted time series (ITS) (member)
RQ1-7 What have been members' overall experiences with the new and ongoing C&E policies/ programs?	H1-7.1 The new and ongoing C&E programs/policies have improved members' experiences.	Member interviews/focus groups (2025, 2027)	MassHealth members enrolled in new or ongoing programs under the Demonstration (n ≤ 30)	Examples of topics: Awareness of new and revised C&E policies (including facilitators and challenges in understanding the policies and how policies impact their application for and use of benefits); getting needed care; likelihood and frequency of income changes at 12-month intervals; overall experiences, etc. (and by program type)	Thematic analysis (member)

a. RQs developed based on STC sections 4.2, 4.10, 4.11, 8.13, 9.1, 10.1, 16.5.b.iv, 16.5.b.v, 16.5.b.vi, 17.6.f, Ta"ble 1, Table 9. (1115 MassHealth Demonstration ("Waiver") | Mass.gov)
b. Data sources are described in section 2.4.2 "Data Sources and Collection Methods" below and section 1.4.1 "Summary of Data Sources".
c. Analytic methods are described below in section 2.4.4 "Analysis Methods"

2.4. Data and Methods

2.4.1. Study Populations

The study population to examine insurance rates will consist of all Massachusetts residents. Annual estimates of the percentage insured will be obtained from the annual American Community Survey (ACS) (described below). For supporting analyses tracking enrollment in specific C&E policies/programs, the study populations will consist of members in those respective programs.

The evaluation will track estimates from Calendar Year (CY) 2018 — baseline estimates — to the most recently available data for ongoing programs. The evaluation will track enrollment as of the program start date for programs that begin during this Demonstration.

2.4.2. Data Sources and Collection Methods

The evaluation will use mixed quantitative and qualitative methods, as described in Table 2-1. The data sources for these measures are the following:

American Community Survey

The ACS is a national survey conducted by the U.S. Census Bureau. The ACS collects information about health insurance coverage nationwide and by the state annually, disseminated by the Census Bureau for public use. Data will be available for three years prior to the PHE through the current Demonstration period.[20]

Program Enrollment Reports

Program reports and summary data will allow the Independent Evaluator (IE) to track enrollment in MassHealth programs. Data will be obtained from MassHealth and the Health Connector.

Medicaid Administrative Data

Medicaid Management Information Systems (MMIS) enrollment data will be used to evaluate study population enrollment and continuity/churning.

Member Interviews and Focus Groups

The IE will randomly select approximately 30 members across MassHealth programs for one-on-one interviews or focus groups to learn about their experiences with these programs. The final number will depend on the saturation of data (i.e., whether interviewees share consistent feedback). The IE will look into possible ways to gauge members' awareness of policies through possible engagement with members and program staff. This data collection will be conducted during State Fiscal Year (SFY) 25 and SFY27. If feasible, the IE will identify Medicaid members from other states that do

[20] While the ACS is considered an appropriate data source for comparing insurance coverage by state, the validity of the ACS in identifying health insurance coverage will be assessed by comparing estimates of MassHealth coverage via ACS and MassHealth enrollment numbers. If there is a measurable discrepancy, the evaluation will describe and discuss the extent to which the estimates of overall insurance coverage in Massachusetts may be under or overestimated by survey data.

not have RE policies (e.g., California, Oregon). Recruiting these Medicaid members may be achieved through collaboration with other state Medicaid agencies — through the assistance of MassHealth — or through advocacy organizations that serve a large number of Medicaid members.

Program Staff and Stakeholder Interview

The IE will also conduct interviews with MassHealth program staff who oversee specific C&E programs/policies to understand staff experiences administering these programs/policies. These interviews will be conducted during SFY25 and SFY27. In addition, if feasible, the IE will aim to identify program staff or organizations that serve a lot of Medicaid members in other states to discuss the perceived impact of RE policy on members' financial wellbeing and experiences with knowing and using the policy. Qualitative interviews with MassHealth members not receiving 90 days' RE coverage may be conducted as an alternative.

2.4.3. Measures

The measures are described in Table 2-1 and fall into three categories:

Quantitative Measures about Coverage and Enrollment

The quantitative measures generally focus on the number and percentage of enrollment and length of enrollment in Medicaid or the Health Connector and in specific MassHealth programs (e.g., Family Assistance, MSP). The IE will work with MassHealth to collect enrollment data across programs. Measures will be presented annually over the analysis period.

Quantitative Measures about Healthcare Utilization

These measures will be created from MassHealth administrative data (e.g., claims/encounter data).

Qualitative Measures about Member and Staff Experiences

The member interview/focus groups will examine topics such as access to care; the likelihood and frequency of income changes at 12-month intervals; the likelihood of third-party payment for healthcare before Medicaid enrollment; and experiences with MassHealth's eligibility determination processes. In addition, program-specific questions will be asked of interviewees as appropriate. Staff interviews will explore their experiences with program administration, such as application and eligibility review processes, facilitators and barriers of data systems, and program-related successes and challenges.

2.4.4. Analysis Methods

The IE will present descriptive statistics for quantitative measures regarding coverage, enrollment, and coverage continuity. For example, the number and percentage of uninsured Massachusetts residents will be tabulated and graphed for each CY. Additional analyses will be performed across populations and by program and other individual characteristics (e.g., age, gender, race, disability status, primary language,

and geography), as appropriate.[21] To examine the change in the uninsurance rate and Medicaid enrollment (e.g., churn) over time, a time-series approach will be used to evaluate the trends before, during, and after the Demonstration period. The trend will be interpreted appropriately. For instance, a decrease in the total number on MassHealth does not always suggest a negative finding (e.g., if the number of the justice-involved population has reduced over time, that is an encouraging trend).

MassHealth offered many flexibilities to members during PHE, including implementation of the continuous coverage provision of the FFCRA, which skewed the enrollment, eligibility, and healthcare utilization patterns during this period. Therefore, our analyses will examine data from before, during, and after the PHE. Pre-COVID-19 data (from 2018) will be included to set a more realistic baseline for outcomes under this Demonstration.

For quantitative measures of healthcare utilization (e.g., annual primary care visits and adult immunizations), the Interrupted Time Series (ITS)[22] approach will be used to examine trends over time. ITS is a quasi-experimental method used to track outcomes over a long-term period to determine the impact of an intervention or policy. The measures will be regression-adjusted to account for individual and other organizational characteristics with trends presented before, during, and after the start of the Demonstration period. The analyses will draw on a few covariates; the examples are member demographic and clinical characteristics (e.g., age, sex, disability status, rating categories, homeless status, justice involvement, federal poverty level), regional characteristics (e.g., region, healthcare resources), and indicators of time and whether the member is subject to C&E policy. The IE will explore the use of imputation method or sensitivity analysis related to race/ethnicity data and include these demographic characteristics in our analysis, as appropriate.

For the qualitative data, analyses will identify consistent themes arising from interviews (or focus groups) with members and program staff. The interview data will be transcribed and uploaded to Dedoose, a web-based qualitative data management software designed to support data analysis. A draft codebook will be developed based on the logic model, interview topics, and themes that arise during the interviews and applied to each interview transcript. Coding will be conducted in multiple rounds, first by pairs and then independently, to ensure the shared understanding and consistent application of the codes to the transcripts. In addition, the team will meet regularly to discuss the coding process, resolve discrepancies, and identify emerging themes.

Using an embedded mixed methods approach, we will synthesize the quantitative and qualitative data. We will solicit an in-depth nuanced understanding of members' and staff experiences, examine how those experiences may be related to policy and practice innovation, and use these findings to explain pertinent trends and outcomes. For example, understanding members' experiences and staff perspectives on C&E policies

[21] The race and language information are not always complete; The analyses by these demographic characteristics will be limited.

[22] Cook, T. D., Campbell, D. T., & Shadish, W. (2002). *Experimental and quasi-experimental designs for generalized causal inference* (pp. 103-134). Boston, MA: Houghton Mifflin.

can help contextualize enrollment trends.[23] Conversely, preliminary quantitative findings from the analysis of data from early in the Demonstration period can generate interview/focus group questions in subsequent qualitative data collection and analysis.

2.4.5. Limitations

This evaluation design of C&E policies includes several limitations broadly described in Section 1.5. Most importantly, these C&E programs and policies are state-wide, meaning that no in-state (unexposed) comparison group exists. Furthermore, given the current Demonstration's multiple C&E programs and policies, we cannot find a comparison group of states with C&E policy portfolios that are well-matched to ours at baseline, due to varying data privacy and security rules, data quality, policy environment, etc. Also, we have no control over other policies or events (e.g., an economic recession) external to the Demonstration that may affect C&E.

Although their evaluation is required, it will be particularly challenging to assess the impact of individual C&E programs that have had no substantive changes from prior years. Substantial new or statistically significant effects from programs that continue unaltered from a prior period throughout the Demonstration are unlikely. Some programs and policies have varying start and end dates within and beyond the Demonstration period, with some coverage being new (e.g., CE for justice-involved populations). Programs coming online during this Demonstration may experience an initial period of engagement, enrollment, and initiation that will delay analytical evidence of program impact. Member experience data will be used to augment our limited ability to analytically interpret observed changes in this chapter.

Finally, enrollment rates peaked during COVID-19, making it difficult to interpret changes from the Demonstration baseline. Therefore, we will measure uninsurance rates and other healthcare utilization before COVID-19 to examine changes over a longer time to distinguish the impact of C&E policies from COVID-19 effects.

[23] Creswell, J. W., & Clark, V. L. P. (2007). Designing and Conducting Mixed Methods Research. Thousand Oaks, CA: *Sage Publications.*

3. Delivery System Reform

3.1. Overview of Delivery System Reform (DSR) Policy Domain

The Delivery System Reform (DSR) evaluation domain includes the Commonwealth's efforts under 1115 Demonstration authority to enact payment and delivery system reforms that promote member-driven, integrated, coordinated care; hold plans and providers accountable for the quality and total cost of care (TCOC); and advance health equity. Policy components in this evaluation domain also include new or re-authorized aspects of the Accountable Care Organization (ACO) Program and the Community Partners (CP) Program, and interact with and are supported by safety net support and workforce development initiatives.[24,25,26,27]

3.1.1. Recap of DSR in the 2017-2022 Demonstration

Under the Massachusetts 2017-2022 Section 1115 Demonstration, MassHealth used $1.8 billion in federal Delivery System Reform Incentive Payment (DSRIP) program funding to support infrastructure and capacity building to achieve the following goals. Additional details on the design of MassHealth's DSRIP program are available in the Commonwealth's DSRIP Protocol.

2017-2022 DSRIP Program Goals:[26]

1. Enact payment and delivery system reforms that promote integrated, coordinated care and hold providers accountable for the quality and TCOC; and
2. Improve integration of physical, behavioral, and long-term services.

At the center of MassHealth's 2017-2022 payment and delivery system reforms were 17 new ACOs that launched in 2018. As of the end of the Demonstration, more than 1.2 million members were enrolled with ACOs, constituting more than three-quarters of eligible members. MassHealth ACOs were built on a foundation of primary care, with expectations and incentives for care to be well-coordinated across a member's physical, behavioral, and social needs. MassHealth required ACOs to engage primary care practice sites with value-based payments tied to cost and quality performance and sought to improve care coordination and reduce potentially avoidable and costly healthcare utilization through:

a) Investments in inter- and intra-organizational relationship-building
b) New services and supports for ACO members
c) Two-sided financial risk
d) Accountability for the quality of care

[24] STCs Section 5.2, 5.8, 8.1 – 8.13, 12.1, 17.6i; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[25] Centers for Medicare & Medicaid Services. (2022, September 28). *CMS Guidance, Approval Letter, Waiver Authority, Expenditure Authority, Special Terms and Conditions*. Mass.gov. https://www.mass.gov/doc/masshealth-extension-approval/download

[26] Centers for Medicare & Medicaid Services. (2017, December 14). *MassHealth Section 1115 Waiver Demonstration Approval 2017-2022*. Mass.gov. download (mass.gov)

[27] Massachusetts Delivery System Reform Incentive Payment (DSRIP) Protocol; https://www.mass.gov/doc/dsrip-protocol-amended-january-10-2018/download

ACOs were required to collaborate with community-based organizations through the CP program to provide care coordination supports for members with complex behavioral health (BH) and long-term service and support (LTSS) needs. ACOs were also expected to partner with social services organizations (SSOs) to implement the Flexible Services Program (FSP) to address health-related social needs (HRSNs).

The 2022-2027 Demonstration authorizes Massachusetts to claim up to $253.2 million (Table 3-1) of remaining DSRIP funds from the previous 2017-2022 Demonstration period. DSRIP funds will be used to support ACOs, ACO FSP, LTSS CP infrastructure and capacity building, and CP care coordination. DSRIP funding allocation per year is as follows:

Table 3-1: DSRIP Funding Allocation (In Millions) by Calendar Year (CY)

CY22	CY23	CY24	CY25	CY26	CY27	Total
$45.7M	$98.6M	$56.1M	$52.4M	$0.5M	$0	$253.2M

*This table is subject to change and will be updated as applicable.

3.1.2. 2022-2027 DSR Policy Domain Goals[28]

In the 2022-2027 extension of its Demonstration, MassHealth declared its ongoing commitment to continue the path of delivery system reform. Of MassHealth's five goals for its 2022-2027 Demonstration, the following four are either focused on or directly linked to DSR.

1. Continue the path of restructuring and reaffirming accountable, value-based care — increasing expectations for how ACOs improve care and trend management and refining the model;
2. Make reforms and investments in primary care, BH, and pediatric care that expand access and move the delivery system away from siloed, fee-for-service (FFS) healthcare;
3. Continue to improve access to and quality and equity of care, with a focus on initiatives addressing HRSN and specific improvement areas relating to health quality and equity, including maternal health and healthcare for justice-involved individuals who are in the community;
4. Support the Commonwealth's safety net, including ongoing, predictable funding for safety net providers, with a continued linkage to accountable care.

[28] Centers for Medicare & Medicaid Services. (2022, September 28). *CMS Guidance, Approval Letter, Waiver Authority, Expenditure Authority, Special Terms and Conditions*. Mass.gov. https://www.mass.gov/doc/masshealth-extension-approval/download

3.1.3. DSR Policies[28]

The primary vehicle for delivery system reform is the ACO program. A description of the program, followed by descriptions of new and enhanced policies related to the program that support 2022-2027 DSR goals, are described below.

Accountable Care Organization (ACO) Program

ACOs are provider-led organizations held contractually responsible for the quality, coordination, and total cost of members' care. The ACO program was re-authorized and approved by CMS with the intent to move MassHealth providers from a primarily FFS system that pays for volume to one that rewards value. As such, ACOs are accountable and at financial risk for the total cost of members' care and quality measures across multiple domains. Members are attributed to ACOs based on primary care providers (PCPs); members choose or are assigned their PCP and are assigned to the plan in which that provider is enrolled. In the MassHealth ACO program, a given PCP may only participate as a PCP in one ACO.

Massachusetts has procured two ACO models for an operational start date of April 1, 2023, running through the end of the Demonstration in 2027.[29]

Accountable Care Partnership Plan (ACPP)

An ACPP is an integrated partnership between a Managed Care Organization (MCO) and a provider-led entity (also referred to as an ACO Partner). Members who enroll in an ACPP have the ACPP as their health plan and receive ACO Covered Services through the ACPP's Provider Network, including its exclusive group of PCPs. ACPPs are responsible for administrative health plan functions (such as claims payment and network development) and coordinated care delivery for the full range of ACO Covered Services. ACPPs are paid capitation rates and bear risk for members' cost of care. The ACPP is also held accountable for quality through a series of Quality Measures. ACPPs are expected to pilot different alternative payment methodologies, maintain close provider relationships, access real-time claims data, and leverage enhanced administrative dollars.

Primary Care Accountable Care Organization (PCACO)

PCACOs are advanced provider-led entities with an exclusive group of participating PCPs. Members who enroll in a PCACO receive primary care through these participating PCPs, BH services through the MassHealth BH Vendor, and other covered services through MassHealth's FFS network. PCACOs and their participating PCPs contract directly with MassHealth. PCACOs are paid a monthly administrative rate. PCACOs are accountable through shared savings and shared losses payments based on TCOC and a TCOC benchmark, as well as on quality through a series of quality measures.

[29] MassHealth ACO RFR Section 1.4, page 7; https://www.commbuys.com/bso/external/bidDetail.sdo?docId=BD-22-1039-EHS01-ASHWA-71410&external=true&parentUrl=bid

New and Enhanced Expectations of ACOs in the 2022-2027 Demonstration

Value-based Payment in Primary Care[30]

While the Massachusetts delivery system as a whole has made progress in moving away from FFS payment, the experience of individual providers is still often that they are paid for volume and not value. In the 2022-2027 Demonstration, MassHealth is increasing the amount of funding for primary care and implementing a primary care sub-capitation payment model that will bring payment reform to the provider level. Payments to participating PCPs will be calculated on a per-member-per-month (PMPM) basis, based on attributed population and a defined set of services/codes, with appropriate risk adjustment. Rates will reflect the enhanced clinical expectations for providers participating in the primary care sub-capitation program and will increase for higher tier practices, commensurate with enhanced care delivery expectations. These expectations will incentivize specific care delivery improvements, including BH integration, enhanced team-based models of primary care, bolstered care coordination services, and more. The primary care sub-capitation program will provide flexible and predictable revenue via prospective, panel-based payments and incentivize population health improvements while moving providers off of an FFS model.[31]

Care Coordination[32,33]

ACOs will be responsible for providing baseline care coordination support for all their members. Several required elements of baseline care coordination are specified in the ACO contracts, such as:

1. Assigning members to PCPs
2. Screening for physical health, BH, LTSS, and HRSNs
3. Ensuring appropriate referrals are made
4. Ensuring appropriate and timely follow-up
5. Coordinating with service providers, community-based organizations, and state agencies to improve integration of care

ACOs must have a methodology to predictively model, stratify, and assign their member populations into risk categories and use their risk stratification process to identify high- and rising-risk members. ACOs must then evaluate such high- and rising-risk members to determine their appropriateness for Enhanced Care Coordination.

Enhanced Care Coordination can be delivered through ACO Care Management or the CP program. CPs[34] are community-based organizations that provide care coordination

[30] STCs 8.5-8.6, page 64-67; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[31] Commonwealth of Massachusetts. (2021, August 18). *1115 Waiver Demonstration Extension Request 2022-2027*, page 18. Mass.gov. download (mass.gov)

[32] ACO RFR Attachment A, ACPP Contract; https://www.commbuys.com/bso/external/bidDetail.sdo?docId=BD-22-1039-EHS01-ASHWA-71410&external=true&parentUrl=bid

[33] ACO RFR Attachment B, Primary Care ACO Contract; https://www.commbuys.com/bso/external/bidDetail.sdo?docId=BD-22-1039-EHS01-ASHWA-71410&external=true&parentUrl=bid

[34] STCs Section 8.8, pages 68-69; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

for members with complex BH and long-term care needs and offer members linkages and support to community resources that facilitate a coordinated, holistic approach to care. CPs provide supports such as person-centered care coordination, assessments, care planning, coordinating the member's care team, navigation to social and community services, and health promotion and wellness activities to their enrolled members. During the 2022-2027 Demonstration, MassHealth will shift the program's structure from a state-managed Demonstration to an ACO/MCO-administered program. Massachusetts has procured two types of CPs that partner with ACOs and MCOs:

- Behavioral Health Community Partners (BH CPs): These CPs support eligible adult members (18-64 years of age) with a diagnosis of or need for services to treat a serious mental illness (SMI), serious emotional disturbance (SED), or substance use disorder (SUD).
- Long-term Services and Supports Community Partners (LTSS CPs): These CPs support eligible pediatric and adult members (3-64 years of age) with LTSS needs, including those with physical disabilities, traumatic brain injuries, development or intellectual disabilities, or other eligible diagnoses. LTSS CPs will have enhanced expectations and an increased scope of responsibilities compared to the 2017-2022 Demonstration. Responsibilities include conducting comprehensive assessments, coordinating the member's care team, and serving as the lead responsible entity and care coordination home for their enrolled members.[35] LTSS CPs will also have increased programmatic expectations in technology, workforce, and operations. MassHealth may provide up to $20 million in additional payments to LTSS CPs (paid directly through the Commonwealth) to support LTSS CPs' Enhanced Care Coordination responsibilities, including technology, workforce, ramp-up, and operations.[36]

Enhanced Care Coordination provides a main point of contact and "first line" coordinator for the member. It includes maintaining high-functioning relationships and open communication with members' PCPs, health systems, community and specialty care team members, schools and early education programs, and other state agencies in order to facilitate care coordination. Additionally, all members enrolled in an Enhanced Care Coordination program must receive a comprehensive assessment and member-centered care plan. As necessitated by the members' needs, Enhanced Care Coordination also provides intensive supports for transitions of care and HRSN coordination. ACOs will be required to enroll a percentage of members in ACO Care Management programs and the CP program. If a member is enrolled in both ACO Care Management and in a CP, the CP serves as the lead care coordination entity.

Additionally, ACOs shall ensure that their providers refer members who meet medical necessity criteria to certain ACO Covered Services that provide additional care coordination, including Community Support Programs (CSP), Intensive Care

[35] Commonwealth of Massachusetts. (2021, August 18). *1115 Waiver Demonstration Extension Request 2022-2027*, *page 32*. Mass.gov. download (mass.gov)

[36] STCs Section 8.8; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

Coordination (ICC), and MassHealth Coordinating Aligned, Relationship-centered, Enhanced Support (CARES) for Kids, as appropriate.

CSP services include outreach and support that enables beneficiaries to use clinical treatment services and other supports in relation to HRSN. Specialized CSPs include a program for homeless individuals (CSP-HI), a program for individuals with justice involvement (CSP-JI), and a tenancy preservation program (CSP-TPP). See Chapter 8 (Health Related Social Needs) for more information and details regarding specialized CSP services. ICC is a Targeted Case Management benefit through the Children's BH Initiative, which provides care planning and coordination services for youth under 21 years of age with SED. MassHealth's CARES for Kids Program is a Targeted Case Management benefit, which provides care planning and coordination services for the highest risk youth under 21 years of age with medical and social complexity.

BH Integration

ACOs will also be responsible for implementing a variety of changes resulting in expanded access and services in BH. Among these will be contracting with newly created Community Behavioral Health Centers (CBHCs), as a part of the Massachusetts Roadmap for Behavioral Health Reform (BH Roadmap), to serve as an entry point for timely, flexible, person-centered, high-quality mental health and addiction treatment on an urgent and ongoing basis.[37] BH CPs will be required to facilitate integration with CBHCs, either by having a CBHC in their organizational structure, as an Affiliated Partner or Consortium Entity, or by holding formalized agreements with all CBHCs in their service area(s).[38] This expectation will ensure alignment between members' care coordination home and BH providers, where appropriate, and support better treatment access for the highest risk members, more clinically robust care planning, and better communication between the BH CP and other providers involved in the member's care (e.g., PCPs, acute hospitals). See Chapter 4 (Behavioral Health) for additional details.

Implementation of Health Equity-focused Policies[39,40]

MassHealth has several new and enhanced expectations of ACOs relating to health equity. ACOs must maintain a Health Equity Committee with diverse representation that has responsibilities including developing and steering the implementation of the ACO's health equity strategy. Information from a population and community needs assessment and input from the Health Equity Committee and ACO stakeholders must be used to develop a Health Equity Strategic Plan. As part of this plan, ACOs must describe any plans for partnering with affiliated hospitals to further shared health equity goals as part of the Hospital Quality and Equity Initiative (HQEI); see Chapter 7 for additional details.

[37] Commonwealth of Massachusetts. (2021, August 18). *1115 Waiver Demonstration Extension Request 2022-2027*, *page 26.* Mass.gov. download (mass.gov)

[38] Commonwealth of Massachusetts. (2021, August 18). *1115 Waiver Demonstration Extension Request 2022-2027*, *page 32.* Mass.gov. download (mass.gov)

[39] ACO RFR Attachment A, ACPP Contract; https://www.commbuys.com/bso/external/bidDetail.sdo?docId=BD-22-1039-EHS01-ASHWA-71410&external=true&parentUrl=bid

[40] ACO RFR Attachment B, Primary Care ACO Contract; https://www.commbuys.com/bso/external/bidDetail.sdo?docId=BD-22-1039-EHS01-ASHWA-71410&external=true&parentUrl=bid

As part of their contracts, ACOs will also be required to ensure meaningful and appropriate training to advance health equity is periodically received by all staff and providers. ACOs must obtain accreditation from the National Committee on Quality Assurance (NCQA)'s Health Equity Accreditation program.

In addition to a quality incentive arrangement, ACOs will participate in the Health Equity Incentive Arrangement. For the purposes of the Health Equity Incentive arrangement, ACO performance will be assessed on three domains:

1. Social Risk Factor Data Domain: Achievement of complete, self-reported, member-level social risk factor data
2. Reporting Domain: Reporting on readiness for health equity disparities reduction, including by reporting performance on certain ACO quality measures stratified by social risk factors
3. Disparities Reduction Domain: Reduction of identified disparities in performance on ACO quality metrics between subgroups stratified by social risk factors

Safety Net Support Linked to Accountable Care[41]

A key goal of the overall Demonstration includes supporting the Safety Net by funding safety net providers in continuous ways while creating and strengthening associations with accountable care. As such, the Demonstration aligns funding by conditioning certain safety net payments on participating in an ACO. See Chapter 5 (Safety Net Care Pool) for additional details.

Workforce Initiatives (WI)[42]

WI aim to support workforce recruitment and retention and to promote the increased availability of certain healthcare practitioners to serve Medicaid beneficiaries. These initiatives aim to address shortages in qualified providers serving MassHealth members. See Chapter 6 (Workforce Initiatives) for additional details. Three programs under the 2022-2027 Demonstration are similar to some of the Statewide Investment (SWI) programs under the 2017-2022 Demonstration with either similar or higher levels of financial incentives. In data collected for our Interim Evaluation of the 2017-2022 Demonstration, these initiatives were described by ACOs and CPs as beneficial for recruiting and retaining staff as they increased capacity for implementing delivery system reform activities. We hypothesize that these initiatives will again be especially useful for ACOs and CPs seeking to retain and increase capacity to meet enhanced expectations for the 2022-2027 Demonstration.

3.1.4. DSR Policy Domain Implementation Plans and Timeline

These aspects of the ACO program are specified in contracts with EOHHS. The contract term is the duration of time for which the contract is in effect, starting with the contract's effective date and lasting until December 31, 2027, or as otherwise specified

[41] STCs Section 11 STCs; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

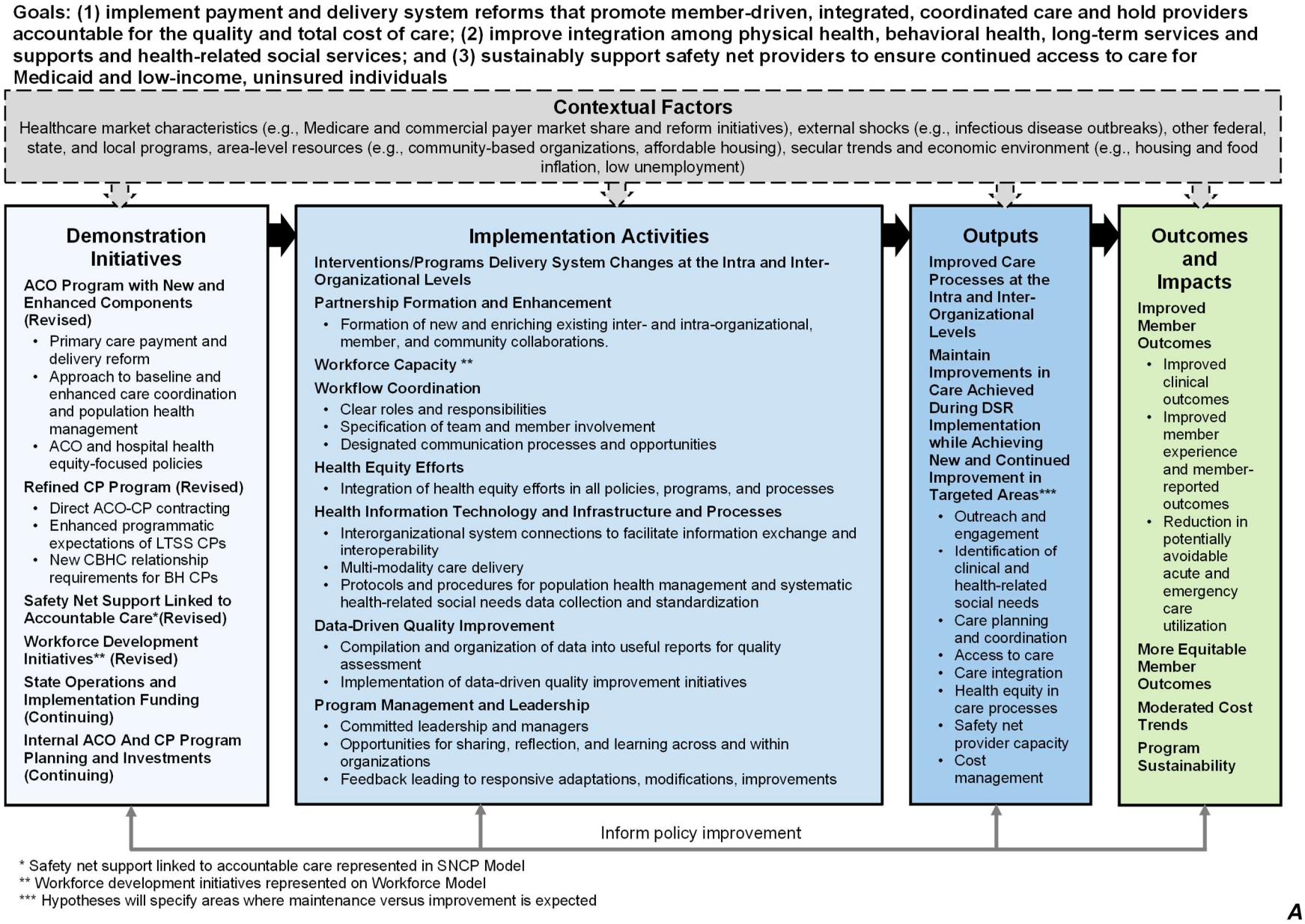
[42] Section 13, pages 99-102; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

by EOHHS. Cost and quality accountability is reconciled to contract (i.e., performance) years. Program Year 1 is anticipated to be a nine-month period commencing April 1, 2023, and ending December 31, 2023, unless otherwise specified by EOHHS. Other Program Years will span a 12-month period commencing January 1 and ending December 31 unless otherwise specified by EOHHS.

3.2. Logic Model

The DSR logic model in Figure 3-1 links the Demonstration Goals to the Demonstration Inputs, Implementation Activities, Outputs, and Outcomes and Impact of the Demonstration. This logic guides the RQs and hypotheses that follow.

Figure 3-1: Logic Model for the DSR Component of the Demonstration



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3.3. Research Questions and Hypotheses

Table 3-2 provides an overview of the RQs, hypotheses, data sources, study populations, measures, and analytic methods that will be used to evaluate the DSR domain. The elements are described in detail below in Section 3.4 Data and Methods.

Table 3-2: Research Questions and Hypotheses for DSR

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
RQ2-1 How did ACOs respond to enhanced expectations for quality, equity, and integrated care?	H2-1.1 ACOs will implement organizational changes to increase their capacity to deliver high-quality, equitable, and integrated care. H2-1.2 ACOs will form and strengthen relationships with hospitals, primary care practices, and PCPs to jointly deliver high-quality, equitable, and integrated care. H2-1.3 The number of ACO providers (health systems, practices, and individuals) accepting value-based payments and the amount of such payments will increase	Document review; (Ongoing) Key Informant individual and/or group interviews and/or open-ended surveys; (2024-2025; 2026-2027) Practice site administrator (pre-2019, pre-2021, post-2024) and ACO provider surveys (pre-2020, pre-2022, post-2026)	ACO and practice level providers and staff: • Providers survey (n=~5,000); • Practice site administrator survey (n=~350); • Leadership and Other staff interviewees (n ≤ 50); • MassHealth staff interviewees (n ≤ 10-15)	Changes to organizational structures, activities, and processes to promote quality, equity, and integration; Reported increases in capacity to deliver high-quality, equitable, and integrated care; Formation of new and strengthening of existing relationships between ACOs and their hospitals, primary care practices, and PCPs; Implementation of strategies by ACOs to increase the level of quality and cost accountability for PCPs and practices; Number of ACO providers (health systems, primary	Qualitative analysis of existing documents; Qualitative analysis of data collected through key informant interviews (KIIs); Analysis of surveys of ACO practice sites (practice site) and ACO providers (provider)

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
				care practices, and individuals) accepting or incentivized by value-based payments, and the amount of such payments Type and amount of quality accountability accepted by health systems, primary care practices, and individual providers	
RQ2-2 How did ACOs and their primary care practices respond to enhanced expectations for clinical service delivery and financial incentives for primary care reform included in MassHealth's sub-capitation program?	H2-2.1 ACOs and their primary care practices will invest in staff and infrastructure to increase their clinical service delivery capacity and decrease staff burnout. H2-2.2 ACOs and their primary care practices will implement strategies to increase access, quality, and continuity of primary care. H2-2.3 ACOs and their primary care practices will implement strategies to reduce inappropriate or potentially avoidable service utilization for their members.	Document review; (Ongoing) Key Informant Individual and/or group interviews and/or open-ended surveys; (2024-2025; 2026-2027) ACO practice site (pre-2019, pre-2021, post-2024) and provider surveys (pre-2020, pre-2022, post-2026)	ACO and practice level providers and staff: • Provider survey (n=~5,000); • Practice site administrator survey (n=~350); • Leadership and other staff interviewees (n ≤ 50); • MassHealth staff interviewees (n ≤ 10-15)	Reported changes to primary care practice staffing, infrastructure, and delivery of clinical services; Reported changes to the types and amounts of primary care practice and provider payment and cost accountability arrangements; Implementation of strategies to increase access, quality, and continuity of primary care; Implementation of strategies by primary care practices to manage the cost of care for members	Qualitative analysis of existing documents Qualitative analysis of data collected through KIIs Analysis of surveys of ACO practice sites (practice site) and providers (provider)

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
RQ2-3 How did access to and continuity of primary care change for ACO members receiving care from primary care practice sites participating in MassHealth's sub-capitation program?	**H2-3.1** Access to and continuity of primary care will increase.	ACO practice site (pre-2019, pre-2021, post-2024) and provider surveys (pre-2020, pre-2022, post-2026); Administrative data (baseline 2015-2017, pre-2018-2022, post-2023-2027); Member surveys (pre-2018-2022, post-2023-2027)	ACO practice site administrator survey (n=~350); ACO members (n=~1.3 million; comparison group of MCO/PCC members n=~152,000); Subgroups defined by member, practice site (e.g., sub-capitation clinical tier), and ACO characteristics	Prevalence of primary care practices in each sub-capitation clinical tier; Continuity of BH care; Continuity of primary care; Access measures reported by practice sites; Member-reported access to care	Descriptive analysis (member); Observed vs expected (member); Quasi-experimental methods (member); Analysis of surveys of ACO practice sites (practice site)
RQ2-4 How did integration between physical, behavioral, social, and long-term services change over time for ACO members?	**H2-4.1** Integration across the care continuum (e.g., physical health, BH, LTSS, acute care, social services) will increase.	Key Informant Individual and/or group interviews; (2024-2025; 2026-2027) ACO Practice Site (pre-2019, pre-2021, post-2024), ACO provider (pre-2020, pre-2022, post-2026), CP staff (pre-2020, pre-2022, post-2026), and Member Surveys (pre-2018-2022, post-2023-2027); Administrative data (baseline 2015-2017, pre-	ACO and practice level providers and staff: • Providers survey (n=~5,000); • Practice site administrators survey (n=~350); • Leadership and other staff interviewees (n ≤ 50); • Care management staff Interviewees (n ≤ 20-30)	Changes to organizational structures, activities, and processes to promote integration; Member experience of physical, social, behavioral, and long-term services integration; Practice site manager, ACO provider, and CP staff perceptions of changes in integration; Diabetes screening for individuals with schizophrenia or bipolar	Qualitative analysis of existing documents; Qualitative analysis of data collected through KIIs; Analysis of survey of ACO practice site (practice site), ACO providers (provider), and CP staff (staff); Analysis of member survey (member); Descriptive analysis (member) Observed vs expected (member);

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
		2018-2022, post-2023-2027)	CP staff: • Administrators interviewees (n ≤ 60); • Front-line staff survey (n=~600) Members: • Managed care eligible members (n=~1.3 million); • ACO members (n=~1.3 million; comparison group of MCO/PCC members n=~152000); • CP (n=~35,000) and ACO care management members (n=~110,000) Subgroups defined by member (e.g., adults, children, chronic conditions) and ACO characteristics (e.g., type)	disorder who are using antipsychotic medication; Physician visit within 30 days of hospital discharge; Follow-Up after Emergency Department (ED) visit for Alcohol and Other Drug Abuse or Dependence (FUA-AD); Follow-up after hospitalization for mental illness; Follow-up with CP after acute or post-acute stay; Follow-up with CP after ED visit (BH CP)	Quasi-experimental methods (member)
RQ2-5 To what extent did enhanced expectations for quality and equity change care for ACO members?	**H2-5.1** The identification of individual members' unmet needs (including health-related social needs) for ACO members will improve	Document review; (Ongoing) Administrative data (baseline 2015-2017, pre-2018-2022, post-2023-2027);	ACO and practice level providers and staff: • Providers survey (n=~5,000);	Perceived improvement in identifying unmet member needs; Perceived improvement in member care processes;	Qualitative analysis of existing documents; Descriptive analysis (member); Observed vs expected (member);

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
	H2-5.2 Care processes for ACO members will improve. **H2-5.3** Healthcare inequities will decline in targeted measures.	Key Informant Individual and/or group interviews and/or open-ended surveys; (2024-2025; 2026-2027) Member surveys (pre-2018-2022, post-2023-2027);	• Practice site administrators survey (n=~350); • Leadership and other staff interviewees (n<50); • Managed care eligible members (n=~1.3 million); • ACO members (n=~1.3 million; comparison group of MCO/PCC members n= 152,000); • MassHealth staff interviewees (n ≤ 10-15) Subgroups defined by member (e.g., adults, children, chronic conditions) and ACO characteristics (e.g., type)	Developmental screening in the first three years of life; Immunizations for adolescents; Childhood immunization status; Timeliness of prenatal care; Topical fluoride for children at elevated caries risk; Asthma medication ratio; Initiation and engagement of alcohol or other drug abuse or dependence treatment; Metabolic monitoring for children and adolescents on antipsychotics; Antidepressant medication management; Oral health evaluation; Screening for depression and follow-up plan; HRSN screening; Annual primary care visit; Other metrics targeted by ACOs for quality	Quasi-experimental methods (member); Qualitative analysis of data collected through KIIs;

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
				improvement and disparities reduction	
RQ2-6 How did ACOs and CPs respond to expectations for Enhanced Care Coordination Programs (CP and ACO Care Management)?	**H2-6.1** Changes to the CP program will strengthen existing and new partnerships between ACOs and CPs. **H2-6.2** The ACOs and CPs will develop new or updated care coordination processes in alignment with enhanced CP expectations. **H2-6.3** LTSS CPs will use infrastructure payments to build an infrastructure and develop the workforce to support enhanced care coordination and to meet higher expectations in the current Demonstration period. **H2-6.4** ACOs will implement new or refine existing care management programs to meet the needs of their enrolled population.	Document review; (Ongoing) Key Informant Individual and/or group interviews and/or open-ended surveys (2024-2025; 2026-2027)	ACO and practice level providers and staff: • Providers survey (n=~5,000); • Practice site administrators survey (n=~350); • Care management staff interviewees (n ≤ 20-30); • Leadership and other staff interviewees (n ≤ 50) CP staff • Administrators interviewees (n ≤ 60); • Administrators and front-line staff survey (n=~600); MassHealth staff Interviewees (n ≤ 10-15)	Factors related to the implementation of changes to care coordination and management processes and programs; Perceived effectiveness of changes to CP program to support development of new partnerships and strengthen existing partnerships; Perceived alignment of care coordination processes with enhanced CP expectations; Development of enhanced infrastructure and workforce by LTSS CPs; Perceived value of LTSS CP direct payments to effectively support enhanced care coordination and efforts to meet higher expectations; Perceived effectiveness of changes to ACO care management programs	Qualitative analysis of existing documents; Qualitative analysis of data collected through KIIs

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
RQ2-7 To what extent did access to and quality of care coordination supports change for members of ACO Enhanced Care Coordination Programs (CP and ACO Care Management)?	**H2-7.1** Coordination of care will improve. **H2-7.2** The quality-of-care coordination supports delivered by CPs and ACOs will increase.	Key Informant Individual and/or group interviews; (2024-2025; 2026-2027) ACO Practice Site (pre-2019, pre-2021, post-2024), ACO provider (pre-2020, pre-2022, post-2026), CP staff (pre-2020, pre-2022, post-2026), and Member Surveys (pre-2018-2022, post-2023-2027); Administrative data (baseline 2015-2017, pre-2018-2022, post-2023-2027)	ACO and practice level providers and staff: • Providers survey (n=~5,000); • Practice site administrators survey (n=~350); • Leadership and other staff interviewees (n ≤ 50); • Care management staff interviewees (n ≤ 20-30) CP staff: • Administrators interviewees (n ≤ 60); • Front-line staff survey (n=~600) CP (n=~35,000) and ACO care management members (n=~110,000) Subgroups defined by member (e.g., adults, children, chronic conditions) and ACO characteristics (e.g., type)	Perceived changes in how well care is coordinated; Perceived changes in access to and quality-of-care coordination supports; Rate of enrollment in ACO enhanced care coordination programs; Annual primary care visit; Initiation/engagement of alcohol, opioid, or other drug abuse or dependence treatment; Antidepressant medication management; Treatment plan completion; Care plan completion; Oral health evaluation (LTSS CP); Metrics selected corresponding to ACO care management program target populations	Descriptive analysis (member); Observed vs expected (member); Quasi-experimental methods (member); Qualitative analysis of data collected through KIIs

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
RQ2-8 How did the volume and mix of services change for ACO members?	**H2-8.1** The volume and mix of services utilized will shift, when clinically appropriate, in the direction of lower-cost sites and types of care. **H2-8.2** Rates of potentially avoidable emergency care and inpatient utilization will decrease. **H2-8.3** Utilization of outpatient LTSS, BH, and physical care services will increase or remain consistent for members.	Administrative data (baseline 2015-2017, pre-2018-2022, post-2023-2027)	Managed care eligible members (n=~1.3 million); ACO members (n=~1.3 million; comparison group of MCO/PCC members n=~152,000); CP (n=~35,000) and ACO care management members (n=~110,000) Subgroups defined by member (e.g., adults, children, chronic conditions) and ACO characteristics (e.g., type)	Primary care utilization; Post-acute care and LTSS utilization; Outpatient utilization; Pharmacy utilization; Inpatient utilization; ED visits and boarding; ED visits for individuals with mental illness, addiction, or co-occurring conditions; All-cause readmissions; Hospital admissions for ambulatory care-sensitive conditions; Pediatric asthma admissions; Imaging for low back pain	Descriptive analysis (member); Observed vs expected (member); Quasi-experimental methods (member)
RQ2-9 How did member outcomes and member experience change for ACO members?	**H2-9.1** Clinical outcomes will improve. **H2-9.2** Members will report improved experiences of healthcare services and supports. **H2-9.3** Inequities in health outcomes will decline in targeted measures.	Member interviews and/or focus groups; (2024-2025; 2026-2027) Member surveys (pre-2018-2022, post-2023-2027); Administrative data (baseline 2015-2017, pre-	Member interviewees (n ≤ 30) Managed care eligible members (n=~1.3 million) ACO members (n=~1.3 million; comparison group of MCO/PCC members n=~152,000)	Member experience of healthcare services and supports; Person-centered primary care measure; Unnecessary C-Section; Maternal morbidity; NICU utilization;	Descriptive analysis (member); Observed vs expected (member); Quasi-experimental methods (member); Qualitative analysis of data collected through KIIs

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
		2018-2022, post 2023-2027)	CP (n=35,000) and ACO care management members (n=~110,000) Subgroups defined by member (e.g., adults, children, chronic conditions) and ACO characteristics (e.g., type)	Controlling high blood pressure; Comprehensive diabetes care: HBA1c poor control; Other metrics targeted for disparities reduction	
RQ2-10 How were Medicaid total cost of care trends affected for ACO members?	**H2-10.1** The rate of increase in the total cost of care for ACO members overall and for those receiving enhanced care coordination will decrease.	Administrative data (baseline 2015-2017, pre-2018-2022, post 2023-2027); ACO financial reconciliation reports (pre-2018-2022, post-2023-2027)	Managed care eligible members (n=~1.3 million) ACO members (n=~1.3 million; comparison group of MCO/PCC members n=~152,000) CP (n=~35,000) and ACO care management members (n=~110,000) Subgroups defined by member (e.g., adults, children, chronic conditions) and ACO characteristics (e.g., type)	TCOC; Cost by service category; Shared savings and shared losses	Descriptive analysis (member); Observed vs expected (member); Quasi-experimental methods (member)
RQ2-11 To what extent can observed changes in care processes, outcomes, and costs be attributed to DSR programs?	**H2-11.1** Improvements in outcomes will be associated with delivery system changes (e.g., changes in program design, organizational activities, and processes).	Key Informant Individual and/or group interviews; (2024-2025; 2026-2027) ACO Practice Site (pre-2019, pre-2021, post-2024), CP staff and ACO	ACO and practice level providers and staff: • Care management staff Interviewees (n ≤ 20-30);	Select quality, utilization, and outcome measures listed in other RQs; TCOC; Cost by service category	Mixed methods to synthesize results across RQs and examine how delivery system changes (e.g., new partnerships, increased accountability or capacity, better integration) are likely causes of

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
	H2-11.2 Cost of care trends will be associated with delivery system changes.	Provider (pre-2020, pre-2022, post-2026), and Member Surveys (pre-2018-2022, post-2023-2027); Administrative data (baseline 2015-2017, pre-2018-2022, post-2023-2027)	• Leadership and other staff interviewees (n ≤ 50) CP staff: • Administrators Interviewees (n ≤ 60); Managed care eligible members (n=~1.3 million) ACO members (n=~1.3 million; comparison group of MCO/PCC members n= ~152,000) CP (n=~35,000) and ACO care management members (n=~110,000) Subgroups defined by member (e.g., adults, children, chronic conditions) and ACO characteristics (e.g., type).		changes in outcomes and costs (member)

a. Research questions developed in response to Special Terms and Conditions sections 17.6i; 8.1-8.13; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

b. Data Sources are described in section 3.4.2 "Data Sources and Collection Methods" and section 1.4.1 "Summary of Data Sources." Evaluation periods reflect the anticipated year of data collection for primary data and the expected baseline, prior demonstration ("pre"), and current demonstration ("post") policy periods, as appropriate, for quantitative analyses of secondary data. The timing of data collection and all details regarding evaluation periods will be updated and provided in the Interim and Summative Evaluation Reports.

c. Analysis methods are described in section 3.4.5 "Analysis Methods"

3.4. Data and Methods

3.4.1. Study Populations

The relevant populations to be studied by RQs are presented along with hypotheses, data sources, and measures in Table 3-2.

ACO Staff

- ACO leadership: Includes executive-level employees at each MassHealth ACO.
- ACO care management staff: Includes non-executive staff employed by the ACO responsible for delivering care management or coordination to ACO members.
- ACO staff: Includes non-executive level employees at each MassHealth ACO with responsibilities other than care management or coordination.

Primary Care Practice Sites and Providers

- PCPs: Includes physicians, nurses, physician assistants (PAs), nurse practitioners (NPs), pharmacists, and social workers delivering primary care services at ACO primary care practice sites.
- Practice Site Administrators (i.e., managers)*:* Includes ACO primary care practice site managers. Practice managers may be providers.
- Practice Care Management Staff: Includes staff embedded at specific primary care practice sites who are responsible for delivering enhanced care coordination to ACO members.

CP Staff

Includes staff or executive level employees providing and/or supporting care management and coordination services for MassHealth members at each CP.

MassHealth Members

MassHealth, the Massachusetts Medicaid and Children's Health Insurance Program (CHIP), serves over 2.16 million Massachusetts residents as of December 2022.[43] We will study the MassHealth members eligible for enrollment in ACOs (i.e., managed care eligible), the primary vehicle for the state's DSR efforts. As of December 2022, the managed care eligible population included approximately 1.48 million members, of whom about 1.22 million were enrolled with one of the state's 17 ACOs. Managed care eligible MassHealth members who were not enrolled with ACOs were either enrolled with one of two MCOs (about 127,000 members), or with the Commonwealth's primary care case management delivery system (i.e., the PCC plan, about 142,000 members). As described above, two ACO models will be in effect during the 2023-2027 contracting period, and we expect to perform stratified analyses to examine differences in experience and performance by type of ACO and potentially other ACO characteristics

[43] MassHealth Snapshot Enrollment Summary of December 2022 Caseload. Unpublished report; https://www.mass.gov/doc/masshealth-caseload-snapshot-and-enrollment-summary-december-2022-0/download

that emerge as important during preliminary analyses of our mixed methods data sources.

We will be studying several subgroups of interest. To understand the impact of enhanced programmatic expectations of ACOs, LTSS CPs, and new CBHC requirements for BH CPs, we will study members with BH and LTSS needs, including those receiving ACO care management (when data are available to identify members) and CP care coordination supports. Consistent with the DSR policy domain's emphasis on integration and care coordination, health equity-focused policies, and primary care payment reform, we also expect to examine subgroups of adult and pediatric members with complex health or social needs or linguistically, ethnically, or racially diverse members for whom these Demonstration initiatives are expected to be particularly beneficial. To understand associations between DSR programs and potential effects, we will also study members with conditions that place them in the denominator of accountability measures (e.g., members with hypertension). Members from the described subgroups may be sampled to participate in key informant interviews (KIIs) or the target of survey recruitment efforts.

Comparison Groups[44]

We will use several comparison groups, following the general principles of selecting comparator populations that most closely resemble the populations exposed to specific Demonstration policies and programs. Due to systematic differences between Medicaid members and commercial members and between interstate policy environments, we plan to primarily draw comparison groups from within the MassHealth program while also exploring opportunities to obtain and leverage data from other state Medicaid programs. MassHealth managed care eligible members enrolled in MCOs and the PCC Plan with similar characteristics will serve as comparison groups for analyses of ACO members, including analyses studying members in ACO care management programs. MassHealth members who are not enrolled with CPs but who have similar sociodemographic and clinical characteristics as members enrolled with CPs will serve as comparison group members for CP members. We will use one or both historical comparison groups and contemporary comparison groups when data for a pool of members with similar characteristics and who are unexposed to programs are available. We will seek to leverage situations conducive to quasi-experimental methods that support stronger levels of inference, such as phased implementation, when possible.

3.4.2. Data Sources and Collection Methods

Our prior evaluation of MassHealth's Demonstration focused on systems transformation/implementation processes and outcomes, informed by the Consolidated

[44] Reschovsky, J., Heeringa, J., & Colby, M. (2018, June). Selecting the Best Comparison Group and Evaluation Design: A Guidance Document for State Section 1115 Demonstration Evaluations *(White Paper)*. https://www.medicaid.gov/medicaid/section-1115-demo/downloads/evaluation-reports/comparison-grp-eval-dsgn.pdf

Framework for Implementation Research (CFIR).[45,46] The CFIR model, with its focus on facilitators and barriers to implementation and implementation strategies, suggests that implementation is an ongoing process, with continued adaptations, given changes in the external context, organizations involved, and member/population needs. We will continue to monitor the DSR implementation process, using quantitative and qualitative data and methods to study existing and new activities.

An additional focus of the 2022–2027 Demonstration is the ongoing shift toward the integration of care processes, given the progress in organizational infrastructure, workforce development, and care coordination. As part of this Demonstration, to comprehensively and specifically document the implementation of more integrated care processes, we will draw on the Comprehensive Theory of Integration (CTI) conceptual model.[47,48] In this model, integration is defined as "a set of organizational and social features and course of action or activities requiring unification that may exist both within and between organizations."[48] The model provides a framework that specifies different types of integration, including organizational features (i.e., structural and functional integration), social features (normative and interpersonal integration), and activities (i.e., process integration). Organizational, social, and activity/process integration are conceptualized as interrelated and mutually reinforcing but conceptually distinct. They are hypothesized to collectively result in more integrated patient care and to ultimately produce beneficial outcomes (i.e., technical quality, efficiency, patient experience, provider satisfaction, and patient health). This model has a foundation in the literature, has been applied and tested in several healthcare systems,[49] and is consistent with the vision, values, and components of the Demonstration.[50,51] In the proposed DSR logic model, we provide a framework for Demonstration initiatives, activities, outputs, and outcomes that takes advantage of the CTI model to support hypothesized relationships and anticipated outcomes.

Data for qualitative analysis will be obtained in two waves during the Demonstration and evaluation. The analysis of document and interview data from Wave 1 (Years 1 and 2 of the Demonstration) will inform the selection of topics and interviewees of interest in Wave 2 (Years 3 to 5 of the Demonstration). For example, in the evaluation of the

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[45] Damschroder, L. J., Aron, D. C., Keith, R. E., Kirsh, S. R., Alexander, J. A., & Lowery, J. C. (2009). Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. *Implementation science, 4(1), 1-15.* PMID: 19664226; PMCID: PMC2736161.

[46] Kirk, M. A., Kelley, C., Yankey, N., Birken, S. A., Abadie, B., & Damschroder, L. (2015). A systematic review of the use of the Consolidated Framework for Implementation Research. *Implementation Science, 11(1), 1-13.* doi: 10.1186/s13012-016-0437-z. PMID: 27189233; PMCID: PMC4869309.

[47] Singer, S. J., Burgers, J., Friedberg, M., Rosenthal, M. B., Leape, L., & Schneider, E. (2011). Defining and measuring integrated patient care: promoting the next frontier in health care delivery. *Medical Care Research and Review, 68*(1), 112-127.

[48] Singer, S. J., Kerrissey, M., Friedberg, M., & Phillips, R. (2020). A comprehensive theory of integration. *Medical Care Research and Review*, *77*(2), 196-207.

[49] Kerrissey, M., Tietschert, M., Novikov, Z., Bahadurzada, H., Sinaiko, A. D., Martin, V., & Singer, S. J. (2022). Social features of integration in health systems and their relationship to provider experience, care quality and clinical integration. *Medical Care Research and Review*, *79*(3), 359-370.

[50] Singer, S. J., Kerrissey, M., Friedberg, M., & Phillips, R. (2020). A comprehensive theory of integration. *Medical Care Research and Review, 77(2), 196-207*. doi: 10.1177/1077558718767000. PMID: 29606036..

[51] Singer, S. J., Sinaiko, A. D., Tietschert, M. V., Kerrissey, M., Phillips, R. S., Martin, V., ... & Agniel, D. (2020). Care integration within and outside health system boundaries. *Health Services Research, 55,* 1033-1048.doi: 10.1111/1475-6773.13578. PMID: 33284521; PMCID: PMC7720712.

2017–2022 Demonstration, the facilitators and barriers for SSOs providing FSP in collaboration with ACOs and CPs to meet members' HRSNs emerged as an issue warranting further exploration. Consequently, in-depth interviews were conducted to explore facilitators and barriers to care coordination and delivery and members' experiences with planning, referral to, and receipt of FSP. Likewise, the COVID pandemic contributed to changes in context that warranted attention in later interviews (e.g., the impact and experience of telemedicine on the workforce and MassHealth members). Similarly, we will leverage Wave 1 data to inform the selection of topics and interviewees in Wave 2 of the evaluation of MassHealth's 2022-2027 Demonstration.

We will rely on six qualitative and quantitative data sources to evaluate the DSR policy domain. A summary of evaluation data sources can be found in Section 1.4.1 Summary of Data Sources. A description of the data sources and collection methods with details specific to the evaluation of DSR policies and programs follows.

Document Review

A range of existing documents (e.g., contracts, participation plans, progress reports) are expected to provide data on participating entities' plans and progress implementing initiatives and the state's progress implementing supports for the delivery system. These data are expected to include narrative descriptions provided by participating entities in their participation plans and progress reports (where required); DSR funding amounts and financial performance by entity, where applicable; and the state's documentation of DSR initiatives, including enrollment rates, contractual relationships, and quality performance. Relevant documents will include, but are not limited to, proposals, contracts and formal agreements between partners, participation plans, progress reports, public-facing annual reports, state-generated reports on funding allocations, and participation in/use of WI.

To standardize the review process, a template will be developed for each set of documents to be reviewed, providing a framework of topics related to targeted RQs and hypotheses (as informed by the CTI model). For example, templates will be developed, and documents will be reviewed as they relate to and provide evidence of partnership formation and enhancement, progress in building workforce capacity, investments in staff and infrastructure, quality improvement efforts, and the provision of opportunities to enhance and improve care processes particularly related to high-risk populations (e.g., homeless, criminal justice-involved). Initially, document reviews will be conducted by staff partner teams to come to a consensus on the definition, meaning, and interpretation of the template framework(s) and data to be extracted. Once consensus has been achieved, staff members will review documents independently, coming together in routine meetings to address questions, agree on a shared understanding of any emerging topics and data extracted, and offer impressions to inform any necessary revisions to the template or document review process. The document review process will be ongoing as organizations provide routine reports throughout the evaluation; additional documents (e.g., policy memos, relevant meeting minutes, etc.) will be reviewed as they become available and known to the evaluation team. For example, new or unexpected documents may emerge in response to changes in context (e.g., a pandemic or public health crisis). These will be reviewed as they relate to specific

research questions and larger contextual factors. These data will be obtained to provide insight into factors that may contribute to outcomes for organizations and members and facilitate an in-depth understanding of the relationships among implementation activities, outputs, and outcomes.

KIIs

Semi-structured individual and/or group interviews will be conducted virtually, using Zoom or a comparable platform, in two waves of data collection (Demonstration Years (DYs) 2–3 and 4–5) with six categories of key informants:

1. MassHealth staff
2. ACO leadership and other staff
3. Practice site administrators,
4. Care management staff (ACO and practice site-based)
5. CP leadership and staff
6. MassHealth members

Open-ended response surveys may be used in lieu of interviews with MassHealth staff for efficiency and informed by prior experience that suggests the information content will be similar between modalities. The perspectives of diverse informants will be obtained as they relate to implementation and integration activities, processes, and outcomes as outlined in the logic model and support an understanding of the Demonstration's impact and effectiveness. All interview participants will complete a background survey in addition to attending interviews to provide relevant information (e.g., demographic characteristics, discipline, role, responsibilities, years with the organization for staff and providers, demographic characteristics, ACO and practice enrollment, and CP services received for members). KIIs will focus on staff, provider, and member experience with the Demonstration; interview data will provide context for interpreting quantitative findings.

Wave 1:

In the first wave (DYs 2–3), we will focus on staff interviews and perspectives on key Demonstration activities within organizations and on members' experiences of integrated patient care processes generically and in groups of members specifically targeted by the Demonstration. In the first two years of the evaluation, we will conduct semi-structured interviews, focus groups, or open-ended surveys with representatives of three key informant groups: (1) MassHealth staff responsible for administering the DSR (n=10 estimated); (2) ACO (about five representatives at each of 17 ACOS) and CP staff (about three representatives at each of 20 CPs); and (3) MassHealth members (up to 30 representing those receiving BH, LTSS, and/or pediatric services and supports). For the MassHealth staff sample, we will identify and recruit MassHealth staff who are knowledgeable about DSR. This will come from MassHealth's Office of Payment and Care Delivery Innovation (PCDI), which oversees various teams, each focused on a specific aspect of DSR, including: ACOs; CPs; Data Governance, Reporting, and Systems; Medical Directors (including clinical and quality improvement); Investments and Social Service Integration; and Analytics. In total, an estimated 55 to 65

MassHealth staff are working across these units and teams. We will target unit and team leads for the interviews. In addition to PCDI staff, when appropriate, we will interview staff from other divisions of MassHealth, including staff from the Office of Behavioral Health.

We have successfully identified and recruited ACO and CP representatives from all participating entities in the evaluation of MassHealth's 2017-2022 Demonstration, using a combination of approaches including contact with MassHealth staff liaisons and direct outreach. By providing the ACO and/or CP liaisons with an overview of the interview protocol, they can assist in identifying and scheduling the relevant representatives for the topics to be queried. As part of the 2017-2022 evaluation, we established a Member Work Group, which advised us regarding member recruitment, interview protocols, and procedures. In addition, our prior interview procedures have been reviewed by a consultant with experience receiving and expertise in studying LTSS, who provided recommendations regarding the use of plain language, the presentation of materials, and the purposeful sampling of disability types. To develop the member experience interview protocols and tailor them for specific target populations, we will obtain consultation from community experts and advocates affiliated with the MassHealth initiative (e.g., members of Advisory Groups) and key advocates representing the member groups of interest. We will recruit our initial sample of members through ACO, CP, and provider organizations nominations and attend to diversity in sample selection. The analysis of Wave 1 interview data will inform the development of interview protocols, procedures, and sampling strategies for the second wave of in-depth data collection.

Wave 2:

In DYs 4 and 5, we will conduct in-depth, virtual individual and/or focus group interviews (e.g., several care coordinators or care team members from within or between one or more entities) regarding activities occurring within and between sites and organizations with strategically selected MassHealth, ACO, and CP staff, and with members reflecting different demographic factors or characteristics (e.g., race, disability), HRSN, and/or defined by other individual- or community-level markers or indices of social risk (e.g., homeless, justice-involved), particularly as these factors may be related to health inequities. As with Wave 1, we anticipate we may use open-ended response surveys in lieu of interviews with MassHealth staff. Wave 2 DSR data collection will include interviews with up to 100 individuals (i.e., staff and/or members) participating in individual or focus group interview sessions. The purpose of these interviews is to obtain in-depth information on a particular topic or issue identified in Wave 1 or that has emerged in the implementation process. The decision regarding individual versus group interview procedures will be made based on the focus or topic of the interview (e.g., care processes from multiple staff and agency perspectives) and the met or unmet needs of participants (e.g., members at risk of homelessness), and to minimize the burden to organizations and members. Consideration will be given to individuals' communication preferences, particularly members receiving LTSS services, who may prefer to be interviewed individually or using the video chat function rather than communicate verbally. While data collection with cross-agency staff teams or specific groups of members may be challenging in terms of scheduling, every effort will be made

to efficiently engage and reflect diverse perspectives while reducing the burden on participants.

Member Experience Surveys

Five rounds of member experience surveys (MES) were conducted by Massachusetts Health Quality Partners (MHQP) to assess change in MassHealth members' experience during the 2017-2022 Demonstration: primary care, BH, and LTSS surveys. Each round had a child (under 18 years of age) and an adult (18 years of age or older) survey for each surveyed population. These surveys will provide baseline data for member surveys to be conducted by MassHealth's vendor to evaluate the 2022-2027 Demonstration. These surveys will be conducted annually during the 2022-2027 Demonstration for members enrolled in ACO and/or CPs and for members enrolled in the PCC Plan. Although MHQP currently fields these surveys for a purpose that is distinct from the Independent Evaluation, these surveys will continue to be an important source of information on member experience. We will continue to provide recommendations to MassHealth and MassHealth's vendor(s) to enhance the value of future surveys for the purposes of evaluation without unduly increasing the burden on respondents.[52] This includes parsimoniously adding content (e.g., the person-centered primary care measure)[53] and leveraging readily available information from existing data sources that could be combined with survey responses.

The sample frame for the ACO/CP's primary care, BH, and LTSS surveys has historically contained members who received at least one of three types of service(s) during the measurement year: primary care, BH, and/or LTSS. Members were included in the sample frame if the following conditions were met:

1. The member was enrolled in one of the ACOs and potentially one of the CPs on the anchor date defined for each survey cycle.
2. The member received primary care, BH services, and/or LTSS services during the measurement year.
3. The sample frame for the PCC Plan will focus on primary care services only and include members who met the following conditions:
    - The member was enrolled in the PCC Plan on the anchor date defined for each survey cycle.
    - The PCC Plan member had at least one primary care visit at one of the PCC Plan practices during the measurement year.

From within the primary care, BH, and LTSS sampling frames, on average, 350,000 members will be surveyed annually: around 80 percent for the primary care survey, 14 percent for the BH survey, and 6 percent for the LTSS survey. The survey sampling

[52] Commonwealth of Massachusetts. (2022, June 2). *Comprehensive Quality Strategy*. Mass.gov. https://www.mass.gov/doc/masshealth-2022-comprehensive-quality-strategy-2/download

[53] Etz, R. S., Zyzanski, S. J., Gonzalez, M. M., Reves, S. R., O'Neal, J. P., & Stange, K. C. (2019). A new comprehensive measure of high-value aspects of primary care. *The Annals of Family Medicine, 17*(3), 221-230.

design will be stratified to collect information from adult members and from parents or guardians of pediatric members.

The primary care survey consists of 13 domains: communications, integration of care, knowledge of patient, adult BH, pediatric prevention, child development, organizational access, office staff, self-management support, telemedicine, child provider communication, overall provider rating, and willingness to recommend.

The BH survey consists of 11 domains: communications, needs for BH, care plan, care coordinator, service scheduling, teamwork, telemedicine, healthy living in the community, members' engagement with care team needs met, willingness to recommend, and overall rating.

The LTSS survey consists of 12 domains: communications, needs met LTSS core, needs met LTSS non-core, care plan, care coordinator, service scheduling, teamwork, telemedicine, healthy living in the community, members engagement with care team-needs met, willingness to recommend, and overall rating.

The surveys are expected to be fielded annually by web and mail in CY2023-2028 to assess member experience for CY2022-2027.

Practice Site Administrator Survey

Two waves of online surveys of ACO primary care practice site administrators were performed during the 2017-2022 Demonstration and will provide baseline data for a single online survey of practice site administrators to be conducted during the first half of the 2022-2027 Demonstration. The sampling frame will again include group practices, community health centers (CHCs), and hospital practices participating in the ACO program. The following sites will be excluded from the survey: solo physician practices, sites that only provide acute care, practice sites located outside of Massachusetts, sites with fewer than 50 MassHealth members, and sites with an unknown number of MassHealth members. From within the sampling frame, we expect all sites within each ACO will be selected. After a thorough literature review, the questionnaire used for the 2017-2022 evaluation was drafted collaboratively by the Independent Assessor, IE, and a research group administering similar surveys. The survey was shared with stakeholders to gather feedback, field-tested with ACO administrators, and further refined before administration. The survey instrument includes questions about care integration, screening, access, social services referrals, risk stratification, performance management, engagement with the ACO, and payment arrangements, among other topics. The 2022-2027 survey instrument is expected to be a modified version of the instrument used in the 2017-2022 evaluation. For any new survey questions, the questions will be piloted with a convenience sample of practice site administrators using cognitive testing and assessments for clarity, completeness, and respondent burden. We will retire survey questions that are no longer relevant or informative.

Provider and Staff Surveys

The IE will conduct a survey of ACO PCPs and CP front-line staff in the second half of the Demonstration period to assess how front-line staff experience delivery system

transformation. Survey respondents are expected to be consistent with the sampling frame for the surveys of ACO/CP providers and staff conducted as part of the independent evaluation of the 2017-2022 Demonstration, including MDs, NPs, RNs, PAs, MAs, and CHWs.

The survey instrument is expected to be a modified version of the instrument used in the 2017-2022 evaluation. A core component of the instrument is the Provider and Staff Perceptions of Integrated Care (PPICs), a validated survey instrument comprising 21 questions across seven care integration constructs, including within care team care coordination, across care team care coordination, and coordination between care teams and community resources. It is anticipated that validated survey questions will again be supplemented with questions specifically tailored to the new and modified programs. For any new survey questions, the questions will be piloted with a convenience sample of provider staff using cognitive testing and assessments for clarity, completeness, and respondent burden. We will retire survey questions that are no longer relevant or informative. The survey will be administered to providers' primary care sites that are included in the sampling frame for the practice site administrator survey. Other details of the sampling plan remain under development and will be informed by pending data (e.g., ACO practice site affiliations and provider distributions).

Administrative Data

Individual-level administrative data comprise of eligibility, enrollment, claims and encounter, and provider records for healthcare services delivered to the MassHealth member population. Since the CP program was implemented, in addition to traditional healthcare services (e.g., medical, pharmacy, laboratory) included in claims and encounters, MassHealth administrative data also include data on enrollment with and supports delivered by CPs (i.e., qualifying activities). This level of enrollment data is also planned to be collected and made available for members of ACO care management programs during this Demonstration period, at which point it will be used for the evaluation. Unique provider identification numbers included on billing records enable linkage to the MassHealth provider characteristics file, which contains provider type, demographics, and ACO affiliation information. Unique practice site identification numbers will allow linkage to practice site survey responses and information provided by the ACO (or publicly available) regarding practice site characteristics (e.g., clinical service tier attested to under MassHealth's sub-capitation program). The MassHealth administrative data are of research quality and have been used previously by the evaluation team.[54,55,56]

[54] Mick, E. O., Alcusky, M. J., Li, N. C., Eanet, F. E., Allison, J. J., Kiefe, C. I., & Ash, A. S. (2021). Complex patients have more emergency visits: don't punish the systems that serve them. *Medical care, 59*(4), 362.

[55] Alcusky, M., Mick, E. O., Clark, M. A., & Ash, A. S. (2020). Calibrating Medicaid payment to need for long-term services and supports. *The American Journal of Managed Care, 26*(12), e388-e394.

[56] Ash, A. S., Mick, E. O., Ellis, R. P., Kiefe, C. I., Allison, J. J., & Clark, M. A. (2017). Social determinants of health in managed care payment formulas. *JAMA Internal Medicine, 177*(10), 1424-1430.

3.4.3. Measures

The measures that will be used to evaluate the DSR policy domain are listed in Table 3-2 by RQ.

Qualitative measures will capture information on actions taken by ACOs and CPs in response to programmatic changes made by MassHealth for the 2022-2027 Demonstration, including further developing structures and processes for delivering integrated, equitable, and high-quality care. Qualitative analyses will also produce information on changes in the approach to identifying and addressing member needs, delivering services and supports, and improving health equity from the perspective of members, providers, staff, and organizational leaders. For ACOs and CPs, we will examine the facilitators and barriers to developing the inter and intra-organizational structures and processes put in place for the 2022-2027 Demonstration, plans for maintaining them, and what modifications are needed going forward.

Quantitative measures hypothesized to be affected by the Demonstration and that can be operationalized using available data or collected from primary sources (e.g., member and provider/staff surveys) will be studied. Quality measures were drawn from the following sources:

- MassHealth ACO Quality Slate
- MassHealth CP Quality Slate
- MassHealth HQEI Slate
- CMS Health Equity Slate (to be added once published)
- National quality measure stewards (e.g., Agency for Healthcare Research and Quality (AHRQ), National Committee for Quality Assurance (NCQA))

In addition to quality measures, we will examine administrative data to better understand changes in utilization patterns over time that may be driving the TCOC performance. We will describe utilization by service categories such as inpatient (e.g., non-maternity physical health, maternity, and BH), ED visits, outpatient non-BH (lab and radiology, non-BH outpatient hospital), outpatient BH (e.g., Adult/Youth Mobile Crisis intervention, and diversionary services), professional services, pharmacy, home health, durable medical equipment, emergency transportation, other medical services, and services not covered by ACOs but rather provided by MassHealth through its FFS program (e.g., LTSS). For services associated with new and enhanced elements of the ACO and CP programs, we will add measures to surveys (e.g., person-centered primary care measure,[57] prevalence and magnitude of quality, and cost accountability arrangements for primary care practice sites and providers). We will operationalize custom measures from administrative data to address relevant hypotheses (e.g., for RQ2-2 – RQ2-3: prevalence of primary care practices in Tier 1, 2, and 3 sub-capitation

[57] Etz, R. S., Zyzanski, S. J., Gonzalez, M. M., Reves, S. R., O'Neal, J. P., & Stange, K. C. (2019). A new comprehensive measure of high-value aspects of primary care. *The Annals of Family Medicine, 17*(3), 221-230.

clinical tier, continuity of primary care, and BH care). These measures will be interpreted in the context of other relevant knowledge generated in the course of the evaluation.

The overarching rationale for our hypotheses is that contract requirements, shared risk, and accountability provisions will lead organizations and their providers to implement strategies to increase quality, improve health equity, and shift utilization to lower-cost settings or services that will deliver equal or greater quality and experience for members. Progress in implementing such strategies is expected to vary across organizations depending upon past experience as MassHealth ACOs, participation in other alternative payment models and value-based payment arrangements, and other factors (e.g., staffing and capital resources).

3.4.4. Covariates

For analyses conducted at the individual (member) level using administrative data, we will draw from a consistent set of characteristics: age, sex (men or women), disability status (either a client of the Massachusetts DMH or the Department of Developmental Services (DDS), or are eligible for Medicaid due to disability), housing problems (either three or more addresses in the year or homelessness by International Classification of Diseases (ICD)-10 code), the Neighborhood Stress Score (NSS), the DxCG medical morbidity summary score, and the RxCG drug-based medical morbidity summary score. A narrower set of characteristics may be used for specific analyses as applicable (e.g., subgroup analyses among women would not use sex as a covariate).

For analyses conducted at the primary care practice site level, covariates will include practice type (solo practitioner, group practice, CHC, hospital licensed health center), size (number of MassHealth members attributed to the site), rurality, and service region. Additional practice site administrator characteristics available to be used as covariates in analyses restricted to survey respondents include age, gender, race/ethnicity, and years at the practice site. Provider-level covariates include type of provider (e.g., physician, social worker) and specialty. Additional provider-level covariates collected via surveys include age, gender, race/ethnicity, years in practice, years at the practice site, and panel size and composition. Analyses conducted at the ACO level (or that incorporate clustering at the ACO level) will include covariates such as ACO type (academic hospital-anchored, community hospital anchored, physician-anchored), ACO size (number of MassHealth members, number of total enrollees across all payers), region, and experience with risk-based contracts with Medicare and commercial payers.

3.4.5. Analysis Methods

Mixed qualitative and quantitative methods will be used to answer the RQs in the DSR policy domain and to evaluate the extent to which Demonstration initiatives and implementation activities promoted delivery system transformation and improved outcomes. Quantitative analyses will examine the impact of policy implementation and changes in outcomes. Qualitative approaches, including two rounds of semi-structured interviews and/or focus groups with key stakeholders, will support an understanding of stakeholder perspectives related to policy implementation activities, context, and

outcomes. Interviews will also provide a contextual understanding of factors that help to explain identified outcomes.

Quantitative Analyses

Descriptive

The demographic, clinical, and social characteristics will first be described by data source and CY for each study population and subpopulation of interest, including measuring specific populations (e.g., A1c and members with diabetes). Where feasible, process and outcome measures will then be calculated for each population in each CY during the baseline and Demonstration period. Certain survey and clinical quality measures will only have data available for the 2018-2022 and/or 2023-2027 periods. All analyses of survey data will use sampling and inverse probability of response weights to obtain results that are adjusted for the sampling approach and observed sources of non-response bias.

Observed versus Expected

The first type of comparison will be between observed and multivariable-adjusted estimates of expected values of each measure for each CY of the Demonstration period. Expected values will be estimated from multivariable models developed using pre-period data and applied to Demonstration period data to predict an individual's value for each measure based on a member's demographic and clinical characteristics (e.g., members with SMI will have a higher probability of ED utilization). These expected values will serve as a type of historical benchmark against which performance during the Demonstration will be compared. For dichotomous (i.e., yes or no) measures, the probability of success on a given measure will be predicted using logistic models. Rates (e.g., hospitalizations per 100 person-years) will be predicted using Poisson, negative binomial, or zero-inflated models, as appropriate. Continuous outcomes (e.g., expenditures) will be predicted using linear models. For each measure and year of the Demonstration period, the observed value for a measure will be divided by the expected value predicted by the model. When higher values of a measure are desired (e.g., a higher proportion of the population screened), a ratio of observed to predicted greater than one will suggest improved quality. When lower values of a measure are desired (e.g., readmission rates), a ratio of observed to predicted of less than one will suggest quality improvement.

Quasi-Experimental Methods

To estimate the counterfactual outcomes that would have occurred absent the Demonstration and which can support stronger inferences regarding program effects, analyses must address potential biases arising from 1) population and system characteristics that differ between plans, and 2) unrelated secular trends occurring between the baseline (2015-17), DSRIP (2018-2022), and the Demonstration (2022-2027) periods. Modern epidemiologic and quasi-experimental design and analysis methods will be applied for this purpose, including propensity score methods to balance

population characteristics,[58,59] and overlap weighting, which addresses the limitations of traditional inverse probability weighting.[60] Difference-in-difference comparisons will address secular trends,[61,62] and weighting will be used to address any violations of parallel trends assumptions. Difference-in-difference comparisons will be combined with interrupted time series (ITS) methods[63,64] for measures that can be calculated at quarterly or monthly frequencies, with seasonal adjustments. Generalized mixed effects linear models will be used for modeling each type of outcome (e.g., dichotomous, continuous, rate) as appropriate and based on observed distributions, with random effects to account for clustering within healthcare organizations, geographic units, and repeated measurements within individuals over time.[65] Bootstrap methods that reflect clustering adjustments will be used to calculate confidence intervals. Analyses spanning multiple COVID-19 time periods (i.e., before, during, and after) will incorporate time-varying terms to adjust for the confounding effects of the COVID-19 pandemic. Sensitivity analyses will be performed to examine the robustness of findings to varied assumptions regarding the onset and offset of COVID-19-related confounding effects.

Continuous Enrollee Analysis

The stable population of continuous MassHealth members, who may have disabilities or other criteria for eligibility for MassHealth that are likely to be permanent or semi-permanent, has been identified as a subpopulation of interest. The stability of this population also affords the opportunity to perform a self-controlled comparison, which contrasts member outcomes during the Demonstration period with their own outcomes during the pre-Demonstration period. A strength of this self-controlled design is that by comparing within individuals, it accounts for time-invariant member characteristics (i.e., those that do not change over time). We will again use difference-in-difference analyses to remove secular effects and mixed effects generalized linear models to account for clustering and repeated measurements while adjusting for demographic (e.g., aging) and disease trends. For each year of the Demonstration, we will conduct a continuous member subgroup analysis where members present in the population of interest during the Demonstration year will be evaluated if they were continuously enrolled in the MassHealth managed care eligible population beginning in 2021 or 2022.

[58] Rosenbaum, P. R., & Rubin, D. B. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika, 70*(1), 41-55.

[59] D'Agostino Jr, R. B. (1998). Propensity score methods for bias reduction in the comparison of a treatment to a non-randomized control group. *Statistics in medicine, 17*(19), 2265-2281.

[60] Li, F., Morgan, K. L., & Zaslavsky, A. M. (2018). Balancing covariates via propensity score weighting. *Journal of the American Statistical Association, 113*(521), 390-400.

[61] Vats, S., Ash, A. S., & Ellis, R. P. (2013). Bending the cost curve? Results from a comprehensive primary care payment pilot. *Medical Care, 51*(11).

[62] Lechner, M. (2011). The estimation of causal effects by difference-in-difference methods. *Foundations and Trends in Econometrics, 4*(3), 165-224. Retrieved from: https://EconPapers.repec.org/RePEc:now:fnteco:0800000014.

[63] Penfold, R. B., & Zhang, F. (2013). Use of interrupted time series analysis in evaluating health care quality improvements. *Academic pediatrics, 13*(6), S38-S44.

[64] Cook, T. D., Campbell, D. T., & Shadish, W. (2002). Experimental and quasi-experimental designs for generalized causal inference. *Boston, MA: Houghton Mifflin* (pp. 103-134).

[65] McWilliams, J. M., Hatfield, L. A., Landon, B. E., Hamed, P., & Chernew, M. E. (2018). Medicare spending after 3 years of the Medicare Shared Savings Program. *New England Journal of Medicine, 379*(12), 1139-1149.

Qualitative Analyses

Our use of document and KII data, qualitatively analyzed, reflects our commitment to an embedded design, integrating quantitative and qualitative data reflecting diverse perspectives to explore the implementation process and to contribute to the explanation of outcomes. [66]

Data systematically extracted from documents and recorded in standardized templates will be stored in secure files for qualitative analyses. The team will review document data templates as they are relevant to specific RQs and hypotheses being addressed. Team members will draft memos summarizing template data for routine review by the larger team. Document review data will be integrated with findings from other sources to address RQs and hypotheses.

Demographic data for the interview participants will be compiled in Microsoft Excel and analyzed descriptively. Descriptive demographic data will be uploaded into Dedoose, a web-based qualitative data management software, for use in conjunction with the analysis of interview data. Using a framework approach, the team will develop initial codes based on the evaluation logic model, related interview topics, and additional themes that arise organically during the interview process. Coding will be conducted in multiple rounds, first by pairs of research team members and then independently, to ensure the team shares an understanding of the codes and applies them consistently. The team will meet routinely to discuss coding until agreement on coding definitions and applications is reached and to address any issues during the coding process. Interrater reliability will be monitored at regular intervals during the coding processes. The Dedoose platform provides for the calculation of kappa coefficients.

Once the coding process is complete, researchers will extract reports of coded text from Dedoose, review the reports for patterns among themes, and summarize findings in memos drafted for review by the total team. Finally, the team will discuss the summary memos to ensure that themes are accurately conveyed and to add additional information as relevant (e.g., to integrate significant contextual factors as identified in the document review). Where relevant and useful, the team will compile analytic matrices with coded data to facilitate further analysis within and/or across participant or organization types, for example.

Using an embedded mixed methods approach, we will integrate the quantitative and qualitative data. We will solicit an in-depth and nuanced understanding of various stakeholder experiences, examine how those experiences may be related to DSR policy and practice innovation, and use these findings to offer explanations regarding pertinent trends and outcomes. For example, understanding stakeholder perspectives on program implementation may help contextualize trends seen in cost and clinical outcomes.[69] Conversely, preliminary quantitative findings from analysis of data obtained early in the Demonstration period can generate questions regarding underlying

[66] Creswell, J. W., & Clark, V. L. P. (2007). Designing and Conducting Mixed Methods Research. Thousand Oaks, CA: *Sage Publications.*

mechanisms that can then be explored in subsequent qualitative data collection and analysis.

3.4.6. Limitations

Quantitative Analyses

Our quantitative data sources and analytic approaches utilizing these data have several limitations. We will cautiously interpret results from multiple analytic methods together with qualitative findings to arrive at robust conclusions.

Surveys

The MES have several limitations, including the potential for recall bias, low response rates, and residual non-response bias despite weighting adjustments that will be applied to correct for it, limited data on clinical conditions and healthcare utilization to adjust for non-response bias, and new items that may require further refinement and validation. Furthermore, members may have been surveyed in multiple years, but we do not have unique member identification numbers (i.e., member IDs) to account for repeated measurements within individuals, and large sample sizes increased the likelihood of detecting statistically significant differences between repeated measure results that are not of clinical or policy significance. Some member surveys (BH, LTSS) are only to be conducted among ACO members, and data will not be available for comparison groups enrolled with MCOs or the PCC Plan. Finally, the member surveys are conducted by a third party for a purpose distinct from evaluation, and the evaluation team has limited input into survey design and implementation.

The ACO provider and CP staff surveys may be subject to recall bias. The surveys are also susceptible to non-response bias. However, the response rate historically has been very good for CP staff surveys, while the ACO response rate was consistent with other provider surveys; for both surveys, we plan to apply weights to adjust for the sampling approach and observed sources of non-response bias.

Administrative Data Analyses

Analyses of administrative data are subject to limitations associated with the nature of such data being created for billing purposes, which may not reflect the actual presence of clinical conditions (e.g., if a member doesn't seek care or obtain a diagnosis) or use of a medication (e.g., if a drug is filled and not taken). Administrative data lack important clinical details such as laboratory values and non-billable services (e.g., certain forms of care coordination and management). For select quality measures and associated measurements, clinical data will be available. However, such data are expected only to be available for subsets of the populations and comparison groups of interest. Demonstration programs are only one of many factors affecting the measures we'll be studying.

Two prominent time-varying confounders include the COVID-19 pandemic and the policy changes enacted throughout the Public Health Emergency (PHE), which will end in the first year of our study period. Although rigorous quasi-experimental designs and statistical methods are planned, comparative analyses remain at risk of unmeasured

confounding. Another potential limitation will be missing data. In situations with substantial missing sociodemographic data (e.g., of self-reported race and ethnicity), we will explore options for conducting analyses using imputed data. We will perform extensive sensitivity analyses to examine the plausibility of alternative explanations for our findings under alternative assumptions about missingness mechanisms and how to account for them analytically.

Qualitative Analyses

Our qualitative data sources and analytic approaches utilizing these data have several limitations.

Document Review

Relevant documents for review will be provided by MassHealth as they become available and from other sources (e.g., relevant state-wide groups) as they are identified. The volume of available documents poses a potential challenge for staff to extract all necessary information within available capacity constraints. We will work with MassHealth to prioritize documents for the review process to ensure we review the most relevant and significant documents first before proceeding to other documents with potentially relevant information.

KIIs

We may confront several limitations during the primary data collection process. As with any self-reported data, information collected in KIIs may be subject to recall bias. KIIs may be conducted by video conference, which represents a strength in terms of consistency of interview format and data collected across sites. Another strength is the increased efficiency that we anticipate will enable us to successfully schedule and collect information from a larger pool of respondents. However, the video conference format limits our ability to view organizational contexts firsthand. We will solicit responses from a range of staff and probe for specifics about processes and workflows to achieve a nuanced understanding of each organization's activities. For member interviews, videoconferencing may pose difficulties related to technology availability. Furthermore, some members may initially express interest when recruited but may no longer be interested or could not participate in an interview due to various clinical or social factors. Our interview procedures have been reviewed by a consultant with experience receiving LTSS and expertise in studying LTSS, who provided recommendations regarding the use of plain language and the presentation of materials. Historically, we have had a sufficiently robust pool of potential interviewees to draw from for interviews; therefore, we anticipate we will be able to complete the planned number of interviews.

4. Behavioral Health

4.1. Overview of Behavioral Health (BH) Demonstration Policy Domain

Behavioral health (BH), defined here as serious mental illness (SMI), severe emotional disturbance (SED), and/or substance use disorders/opioid use disorder (SUD/OUD), remains a top priority in the 2022-2027 Demonstration period. The BH Demonstration domain has three main policy components: (1) diversionary BH services (Special Terms and Conditions (STC) 5.11), (2) a full range of SUD/OUD treatment services, including residential and inpatient treatment for individuals with SUDs/OUD (STC 6), and (3) residential and psychiatric inpatient treatment for individuals with SMI or SED (STC 7).

4.1.1. BH Policy Domain Goals

The overall goals of the BH Demonstration policy domain are to:

1. Strengthen the delivery of BH outpatient, urgent, and crisis care;
2. Increase rates of early identification, initiation, and engagement in BH treatment;
3. Increase access to community-based recovery support services to improve member health and increase rates of long-term BH recovery;
4. Improve access to high-quality, evidence-based BH treatment services, including services provided in residential and inpatient treatment settings that qualify as an Institution for Mental Disease (IMD);
5. Increase adherence and retention to treatment for members with SUDs;
6. Improve access to care for physical health conditions amongst members with BH conditions;
7. Improve care coordination, especially continuity of care in the community following episodes of acute care in hospitals and residential treatment facilities.
8. Reduce utilization of emergency departments (EDs) and inpatient hospital settings for treatment where the utilization is preventable or medically inappropriate through improved access to other services along the continuum of care services;
9. Improve the availability of crisis stabilization services;
10. Reduce time spent in EDs awaiting disposition to clinically appropriate placement;
11. Reduce preventable readmissions to acute psychiatric hospitals, 24-hour SUD treatment services, and residential settings; and
12. Reduce overdose deaths, particularly those due to opioids.

The BH policy domain is being implemented in the context of the Massachusetts Roadmap for Behavioral Health Reform (BH Roadmap),[67] which provides significant investments to (1) increase access to the appropriate BH treatment when and where people need it and (2) significantly strengthen the delivery of outpatient, urgent, and crisis treatment, and to improve the integration of BH care with primary care.

Overview of Diversionary BH Services

Diversionary BH services are home- and community-based mental health and SUD services provided as a clinically appropriate alternative to, and diversion from, inpatient services in more community-based, less structured environments. Diversionary services are provided to support an individual's return to the community following a 24-hour acute placement or to provide intensive support to maintain functioning in the community. There are two categories of diversionary services: those provided in a 24-hour facility and those provided on an outpatient basis in a non-24-hour setting or facility. Both 24-hour and non-24-hour diversionary BH services are primarily provided by free-standing (community-based) or hospital-based programs licensed by the DMH or DPH.

Overview of SUD Services

Under prior Demonstrations, the Commonwealth has expanded access to SUD treatment services and ongoing recovery support to improve beneficiary health and increase rates of long-term recovery. Under the SUD Demonstration component, eligible MassHealth members will continue to have access to high-quality, evidence-based OUD and other SUD treatment services, including services provided in residential and inpatient treatment settings that qualify as an IMD that are not otherwise reimbursable under section 1903 of the Social Security Act.[68] The Commonwealth will continue to be eligible to receive Federal Financial Participation (FFP) for Medicaid beneficiaries residing in IMDs under the terms of this Demonstration for coverage of medical assistance, including OUD/SUD benefits that would otherwise be reimbursable if the beneficiary were not residing in an IMD.

The American Society of Addiction Medicine (ASAM) Criteria Assessment shall continue to be used for all beneficiaries to determine placement into the appropriate level of care.

MassHealth anticipates that the Massachusetts DPH Bureau of Substance Addiction Services (BSAS), the single state authority on SUD services, will continue to fund primary prevention efforts, including education campaigns and community prevention coalitions. Intervention and treatment will be available to MassHealth members, as described below, in several different settings and allow for a bio-psycho-social clinical assessment, based on the ASAM principles, to gain an understanding of addiction

[67] The Commonwealth's Roadmap for Behavioral Health is a multi-year blueprint, based on listening sessions and feedback from nearly 700 individuals, families, providers, and other stakeholders who identified the need for expanded access to treatment, more effective treatment, and improved health equity. See more details here: Commonwealth of Massachusetts. (2021). *Roadmap for Behavioral Health Reform*. Mass.gov. https://www.mass.gov/service-details/roadmap-for-behavioralhealth-reform

[68] Social Security. (n.d.). *Payment to the States*: *Compilation Of The Social Security Laws. Ssa.gov*. Social Security Act §1903 (ssa.gov)

severity, co-occurring mental health issues and trauma, physical health issues, family and social supports, housing stability, and other issues.

Overview of SMI/SED Services

MassHealth aims to ensure that members have access to the full range of services, including those services provided in facilities that meet the definition of an IMD, such as acute inpatient psychiatric hospitalization services, community crisis stabilization for adults and youth (CCS), and community-based acute treatment for children and adolescents (CBAT). IMDs will ensure smooth transitions to clinically appropriate levels of community BH care, physical healthcare, and social services (as available) necessary to support individuals with SMI or SED in the community through transition planning and care coordination.

4.1.2. BH Policy Domain Components and Desired Outcomes[69]

Diversionary BH Services Domain Components

As outlined in the STCs, the following is a summary of Diversionary BH Services that the Commonwealth will cover under the Demonstration:

- Community Support Program (CSP)[70] (Non-24-hour facility)
- Transitional Care Unit Services (24-hour facility)
- Program for Assertive Community Treatment (PACT) (Non-24-hour facility)
- Partial Hospitalization[71] (Non-24-hour facility)
- Psychiatric Day Treatment (PDT)[71] (Non-24-hour facility)
- Intensive Outpatient Program (IOP)[71] (Non-24-hour facility)
- Structured Outpatient Addiction Program (SOAP)[71] (Non-24-hour facility)
- Emergency Services Program (ESP)[71] (Renamed Mobile Crisis Intervention as of January 2023)

SUD Services Domain Components

As outlined in the STCs, the following is a summary of SUD/OUD Services that the Commonwealth will cover under the Demonstration:

- ASAM Level 3.3 Clinically Managed Population-Specific High-Intensity (not currently implemented)
- ASAM Level 3.1 Clinically Managed Low-Intensity Residential Services (24-hour Transitional Support Services)

[69] STCs Sections 5.11; 6.- and 7-7.10; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[70] Does not include specialized CSPs outlined in STC 15, HSRN; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[71] Services provided under the Medicaid state plan. Definition may change pursuant to any state plan amendment.

- ASAM Level 3.1 Clinically Managed Low-Intensity Residential Services (24-hour Residential Rehabilitation Services and 24-hour community-based family, transition-age youth, and youth SUD treatment services)
- Recovery support navigator services
- Recovery coach services
- ASAM Level 3.5 Clinical Stabilization Services
- ASAM Level 3.7 Acute Treatment Services
- ASAM Level 4 Inpatient Medically Managed Addiction Treatment[72]

SMI/SED Services Domain Components

As outlined in the STCs, the following is a summary of SMI/SED Services that the Commonwealth will cover under the Demonstration:

- Community Crisis Stabilization (CCS)[73]
- Acute psychiatric inpatient services delivered in facilities that qualify as IMDs[72]
- Community-Based Acute Treatment for Children and Adolescents (CBAT)[74]

Desired BH Outcomes

The overall desired member outcomes for the BH policy domain of the Demonstration include the following:

- Reduce the time spent in EDs awaiting placement in a clinically appropriate level of care
- Shorten medically necessary inpatient lengths of stay
- Reduce overdoses and overdose deaths, particularly due to opioids
- Decrease 30-day all-cause readmissions to acute BH hospitals and residential programs
- Increase utilization of medically necessary community BH services
- Improve access to physical healthcare for members with BH diagnoses
- Increase rates of identification, initiation, and engagement in treatment for SUD
- Increase adherence to and retention in SUD treatment
- Reduce utilization of EDs and inpatient hospital settings for treatment where the utilization is preventable or medically inappropriate through improved access to other continuum of care services
- Balance the benefits and costs of Demonstration services

[72] New to the waiver (as of 8/1/22, under the prior demonstration) for IMD authority. Otherwise, services provided under the Medicaid state plan. Definition may change pursuant to any state plan amendment.

[73] These services are available for all members, except for those in MassHealth Limited. Moved under IMD authority in the prior demonstration (as of 8/1/22).

[74] This will be available for children and adolescents enrolled in managed care. Moved under IMD authority in the prior demonstration (as of 8/1/22).

4.1.3. BH Policy Domain Implementation Plans and Timeline

The evaluation of the BH domain will rely on a mixed methods approach to determine whether and how the investments made through the BH program are contributing to achieving the Demonstration goals as described in the STCs[75] and SMI/SED Implementation Plan, in particular STC 7.2.[76]

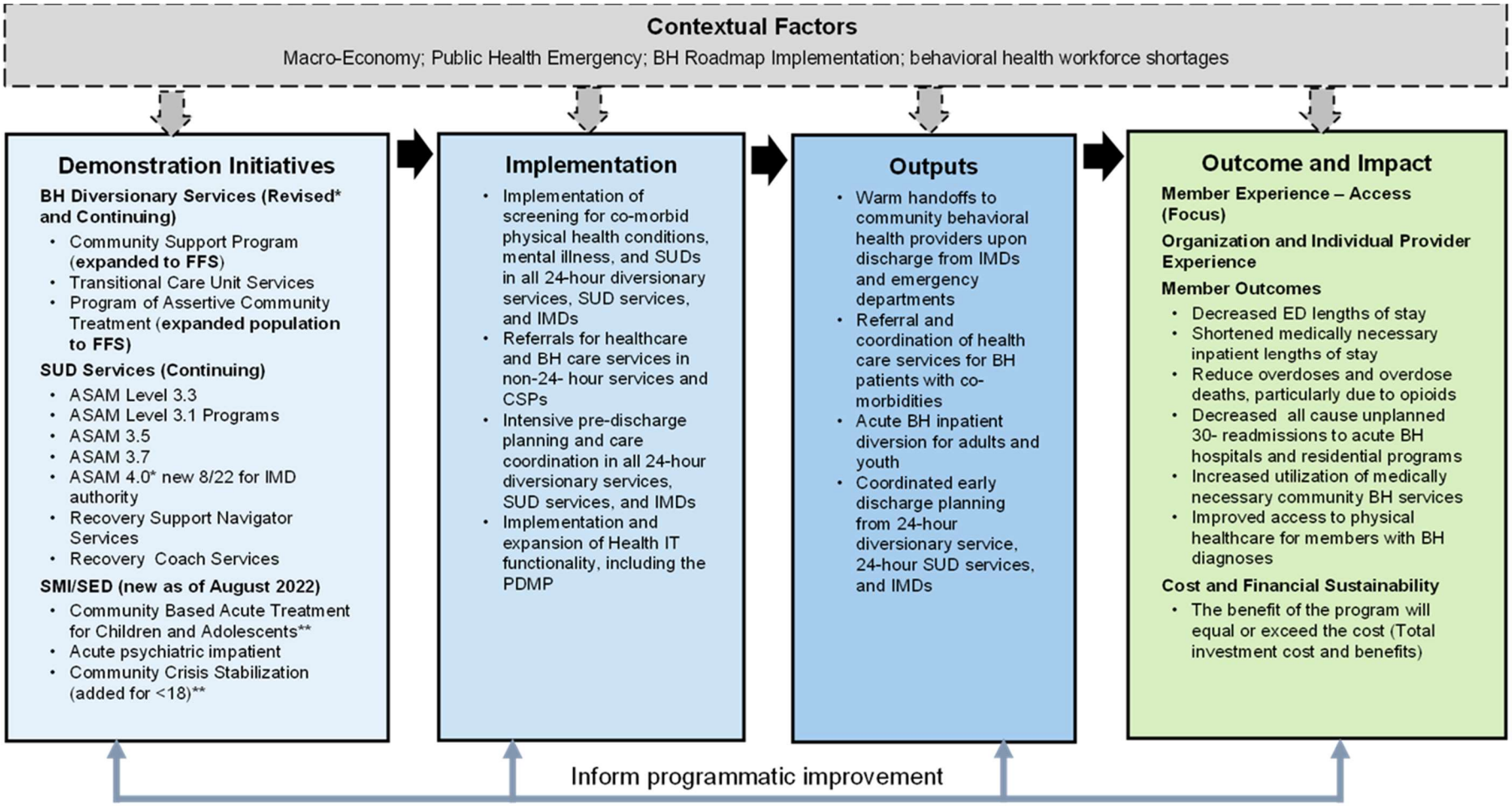
4.2. Logic Model

The BH logic model in Figure 4-1 links the Demonstration Goals to the Demonstration Inputs, Implementation Activities, Outputs, and Outcomes and Impact of the Demonstration. The research questions (RQs) and hypotheses that follow are guided by this logic.

[75] STCs Sections 5.11; 6.- and 7-7.10; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[76] STC 7.2, SMI/SED Implementation Plan; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

Figure 4-1: Logic Model for the BH Component of the Demonstration



*ESP/MCI, structured outpatient addiction program (SOAP), psychiatric day treatment, partial hospitalization, intensive outpatient are state plan services. ASAM 4.0 is state plan except for IMD waiver authority. Transitional Care Unit is continuing.
**CCS (except for the <18 population) and CBAT are continued from the previous waiver under IMD authority as of August 2022.

4.3. Research Questions and Hypotheses

Figure 4-1 provides an overview of the RQs, hypotheses, data sources, study populations,[77] measures, and analytic methods that will be used to evaluate the BH domain. The elements are described in detail in Section 4.4 Data and Methods. [78,79,80,81]

Table 4-1: Research Questions and Hypotheses for BH

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
RQ3-1 Do Demonstration diversionary services result in a reduction in ED use and length of stay (LOS)?	H3-1.1 A reduction in ED use will be observed over time after the implementation of the Demonstration. H3-1.2 A reduction in ED LOS will be observed over time after the implementation of the Demonstration.	MassHealth Medicaid Management Information System (MMIS) claims/ encounter data (baseline 2015-2017, pre-2018-2022, post-2023-2027); Provider and member interviews 2024-2025; 2026-2027	Quantitative: members with BH diagnoses (N=~275,000) Qualitative: providers (n ≤ 60) members (n ≤ 30)	ED visits for individuals with mental illness, addiction, or co-occurring conditions stratified by age (6-17, 18-64); ED boarding of members with BH conditions; Member report of support from peers and psychiatric consultants and perception of its reduction in LOS; Provider report of the usefulness of peer support and psychiatric consultation on reduced ED LOS and factors that support/impede use and effectiveness of peers and psychiatric consultants in EDs	Descriptive statistics (member); Interrupted time series (ITS) (member); Qualitative thematic analysis (providers/members)

[77] Please refer to 4.4.1 "Study Population" for a detailed description of the study populations.

[78] STC 17.6, Evaluation Questions and Hypotheses; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[79] Centers for Medicare & Medicaid Services. (n.d.). *Evaluation design guidance for section 1115 demonstrations for beneficiaries with serious mental illness/serious emotional disturbance and substance use disorders: SMI/SED and SUD Evaluation Guidance*.

[80] Centers for Medicare & Medicaid services. (n.d.). Goals, research questions, and analytic approaches for evaluating section 1115 serious mental illness/serious emotional disturbance demonstrations. SMI/SED and SUD evaluation design guidance: *Appendix A*.

[81] Centers for Medicare & Medicaid services. (n.d.). *SMI/SED and SUD Evaluation Design Guidance: Appendix B*

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
RQ3-2 Do Demonstration diversionary services reduce the number of preventable acute psychiatric readmissions?	H3-2.1 Use of diversionary services will be associated with a small reduction in 30-day acute psychiatric readmissions[82]	MMIS claims/encounter data (baseline 2015-2017, pre-2018-2022, post-2023-2027)	Members with BH diagnoses (N=~275,000)	Plan all-cause readmissions for members with a SUD/SMI/SED; Number of beneficiaries in the Demonstration population who used any services related to mental health during the measurement period; Number of beneficiaries in the Demonstration population who used any services related to mental health during the measurement period; Number of beneficiaries in the Demonstration population who used intensive outpatient and/or partial hospitalization services related to mental health during the measurement period; Follow-up after ED visit for mental illness	Descriptive statistics (member); Joint longitudinal and survival Analysis - ITS approach - segmented regression (member)
RQ3-3 What is the impact of Demonstration diversionary services on the overall cost of care	H3-3.1 Use of diversionary services will be cost-neutral.	MMIS claims/encounter data annual baseline (2015-2017, pre-2018-2022, post-2023-2027)	Members with BH diagnoses (N=~275,000)	Total cost of care (TCOC) (All Covered Services); Expenditures by service category broken down by individuals with any SUD-related diagnosis, OUD	ITS for cost analysis (member)

[82] Commonwealth of Massachusetts. (2019, May). *Acute Inpatient Hospital Bulletin 169*. Mass.gov. https://www.mass.gov/doc/acute-inpatient-hospital-bulletin-169-in-state-acute-hospital-30-day-readmissions-policy-0/download

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
for members with a BH diagnosis?				diagnosis, or SMI/SED diagnosis	
RQ3-4 How well did the Demonstration increase access to and utilization of SUD treatment services?	H3-4.1 The Demonstration's continuous coverage of OUD/SUD treatment services increased rates of identification, initiation, and engagement in treatment among individuals with SUD.	MMIS claims/encounter data (baseline 2015-2017, pre-2018-2022, post-2023-2027)	Members with SUD/OUD diagnoses (N=~260,000)	Initiation and engagement of alcohol and other drug dependence treatment (IET)	Descriptive statistics (member); ITS approach - segmented regression (member)
RQ3-5 What was the impact of the Demonstration on individuals with any SUD diagnosis (including, in particular, OUD diagnosis) adherence to and retention in treatment?	H3-5.1 The Demonstration's continuous coverage of OUD/SUD treatment services improved adherence to treatment among individuals with any SUD diagnosis (including, in particular, OUD diagnosis).	MMIS claims/encounter data (baseline 2015-2017, pre-2018-2022, post-2023-2027); BSAS program data, if available	Members with SUD/OUD diagnoses (N=~260,000)	Continuity of pharmacotherapy for OUD Follow-up after ED visit for mental illness Percentage of members with any SUD/OUD diagnosis who used the following per month: Outpatient SUD services; Intensive outpatient services; Medication-assisted treatment for SUD; Residential treatment (ASAM Level 3.1), including average length of stay; ASAM level 3.3 (once implemented); Clinical stabilization services (ASAM Level 3.5);	Descriptive statistics (member); ITS approach - segmented regression (member) Joint modeling of event counts and survival times analyses (member)

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
				Acute treatment services (ASAM Level 3.7); Inpatient withdrawal management; Outpatient detox; Recovery coach; Recovery support navigator	
RQ3-6 To what extent did the Demonstration reduce utilization of emergency departments and inpatient hospital settings for treatment where the utilization is preventable or medically inappropriate through improved access to other continuum of care services?	H3-6.1 The Demonstration's continuous coverage of OUD/SUD treatment services reduced utilization of preventable or medically inappropriate care at ED and inpatient hospital settings among individuals with SUD and/or OUD-related diagnoses.	MMIS claims/encounter data (baseline 2015-2017, pre-2018-2022, post-2023-2027)	Members with SUD/OUD diagnoses (N=~260,000)	ED use for any SUD-related diagnosis and OUD diagnosis Inpatient admissions for any SUD-related diagnosis and OUD diagnosis	Descriptive statistics (member); ITS approach - segmented regression (member); Joint modeling of event counts and survival times analyses (member)
RQ3-7 To what extent did the Demonstration impact readmissions to the same or higher level of care where the readmission is preventable or	H3-7.1 The Demonstration's continuous coverage of OUD/SUD treatment services resulted in fewer readmissions to the same or higher level of care.	MMIS claims/encounter data (baseline 2015-2017, pre-2018-2022, post-2023-2027)	Members with SUD/OUD diagnoses (N=~260,000)	Plan all-cause readmissions for members with a SUD/SMI/SED	Descriptive statistics (member); ITS approach - segmented regression (member)

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
medically inappropriate?					
RQ3-8 To what extent did the Demonstration impact overdose deaths, particularly those due to opioids?	H3-8.1 The Demonstration's continuous coverage of OUD/SUD treatment services reduced non-fatal overdoses and overdose deaths, particularly those due to opioids.	MMIS claims/encounter data State overdose data (baseline 2015-2017, pre-2018-2022, post-2023-2027); Massachusetts death records (baseline 2015-2017, pre-2018-2022, post-2023-2027)	Members with SUD/OUD diagnoses (MMIS: N=~260,000) Massachusetts death records: (N=~58,000[83])	Use of opioids at high dosages in persons without cancer Nonfatal overdoses, overall And opioid-related Overdose deaths, overall and opioid-related	Descriptive statistics (member); ITS approach - segmented regression (member)
RQ3-9 To what extent did utilization of physical healthcare services for members with SUD improve due to the Demonstration focus on care coordination between physical and BH for SUD members with comorbidity?	H3-9.1 The Demonstration effort to improve care coordination between physical and for members with SUD with comorbidity improved access to physical healthcare for comorbid physical and BH conditions among members with any SUD diagnosis, including OUD diagnoses.	MMIS claims/encounter/ provider data (baseline 2015-2017, pre-2018-2022, post-2023-2027)	Members with SUD/OUD diagnoses (N=~260,000)	Medication for addiction treatment prescribers; See RQ3-5	Descriptive statistics (provider/member); ITS approach - segmented regression (provider/member)
RQ3-10 What is the impact of the Demonstration's continuous coverage of	H3-10.1 The Demonstration's continuous coverage of OUD/SUD treatment services across a	MMIS claims/encounter data (baseline 2015-2017, pre-2018-2022, post-2023-2027)	Members with SUD/OUD diagnoses (N=~260,000)	TCOC (All Covered Services) Expenditures by service category for individuals with any SUD-related diagnosis or OUD diagnosis	Descriptive statistics (member/type of care); ITS approach - segmented regression (member/type of care)

[83] 2540 opioid-related deaths in 2019.

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
OUD/SUD treatment services on the TCOC per member with SUD?	comprehensive continuum of care and focus on coordinating physical and mental health reduced the TCOC for members with SUD diagnosis.				
RQ3-11 What is the impact of the SMI/SED Demonstration on access to the full range of community-based BH services, including adult and youth CCS?	H3-11.1 An increase in utilization of community-based services by MassHealth members will be observed following SMI/SED Demonstration implementation.	MMIS claims/encounter data (pre-2018-2022, post-2023-2027); Member interviews; (2024-2025; 2026-2027) Member Survey (2024-2027)	Adult and child MassHealth members with SMI/SED diagnoses (n=~ 90,000) Qualitative: providers (n ≤ 60) members (n ≤ 30) Survey: (n=~9,800 children; n=~20,000 adults)	Healthcare utilization; Total number of members with SMI/SED diagnoses who used BH services; Outpatient SUD professional visits; Inpatient visits; Outpatient BH visits; Member experience of access to services	Descriptive (member); Thematic analyses; Case study; ITS (member)
RQ3-12 Does increased access to SMI/SED Demonstration services reduce ED LOS hours?	H3-12.1 ED length of stay will be observed to decrease over time after implementation of Demonstration services.	MMIS claims/encounter data pre-2018-2022, post-2023-2027)	Adult and child members with SMI/SED diagnoses (n=~90,000)	ED visits for individuals with mental illness, addiction, or co-occurring conditions stratified by age (6-17, 18-64); ED boarding of members with BH conditions	Descriptive statistics (member); ITS (member)

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
RQ3-13 What is the impact of SMI/SED Demonstration services on preventable readmissions to acute psychiatric inpatient and residential facilities?	H3-13.1 A reduction in preventable readmissions to acute psychiatric services will be observed following the implementation of Demonstration services.	MMIS claims/encounter data pre-2018-2022, post-2023-2027);	Adult and child members with SMI or SED diagnoses (n=~90,000)	Plan all-cause readmissions for members with a SUD/SMI/SED	Descriptive statistics; Joint longitudinal and survival analysis - ITS approach - segmented regression (member)
RQ3-14 What is the impact of SMI/SED Demonstration services on continuity of care post discharge from acute psychiatric inpatient and residential facilities?	H3-14.1 Timely transitions of care from acute psychiatric inpatient services to community-based services will be observed following the implementation of the Demonstration. H3-14.2 Improved information sharing post discharge will be observed following the Demonstration.	MMIS claims/encounter data pre-2018-2022, post-2023-2027); Member interviews; (2024-2025; 2026-2027) Member Survey (2024-2027)	Quantitative: Adult and child members with SMI or SED diagnoses (n=~90,000) Qualitative: providers (n ≤ 60) members (n ≤ 30) Survey: (n=~9,800 children) (n=~20,000 adults)	Follow-up after hospitalization for mental illness: (6-17, 18-64); Number of beneficiaries in the Demonstration population who used any services related to mental health during the measurement period; Member report of continuity of care post discharge	Descriptive (member); ITS (member); Thematic analysis
RQ3-15 What is the impact of SMI/SED Demonstration services on the overall cost of care for members with a BH diagnosis?	H3-15.1 Costs for SMI/SED services will be observed to be stable following the Demonstration.	MMIS claims/encounter data pre-2018-2022, post-2023-2027);	Adult and child members with SMI or SED diagnoses (n=~90,000)	TCOC (all covered services); Expenditures by service category for individuals with any SUD-related diagnosis or OUDSMI/SED diagnosis; Inpatient psychiatric IMD inpatient or IMD residential	ITS cost analysis (member/type of care)

a. Research questions developed in response to STCs sections 5.1.1, 7.2.c.i.6, 7.2.c.ii, 17.6, 17.6b; 1115 MassHealth Demonstration ("Waiver") | Mass.gov
b. Data Sources are described in section 4.4.2 “Data Sources and CollectionMethods,” and section 1.4.1, “Summary of Data Sources.”
c. Analysis methods are described in section 4.4.4, “Analysis Methods.”

4.4. Data and Methods

The impact of the Demonstration cannot be fully separated from the Commonwealth's other efforts addressing BH challenges, including the BH Roadmap initiatives, such as Community Behavioral Health Centers (CBHC) and the BH Helpline, a 24-hour central access and resource service available via phone or text, which opened in January 2023, amongst others. Our evaluation will assess the impact of BH Demonstration services on outcomes and costs within the context of other system changes implemented as part of the BH Roadmap. Secondary data from the BH Helpline and BH Roadmap evaluation can be used to provide further context for Demonstration findings.

4.4.1. Study Population

Study Population

The study population will consist of MassHealth members (excluding MassHealth Limited members and dual-eligibles) with SMI/SED (See Appendix C for diagnoses with the MassHealth algorithm for determining SMI/SEDs) and/or SUD diagnoses, including alcohol use disorders and other SUD diagnoses but excluding tobacco. Members will be identified as having a SMI/SED or SUD if they have an International Classification of Diseases (ICD)-9/10 diagnosis on two or more medical claims/encounters in any position, excluding lab services. A member will be considered as having a SUD or SMI/SED starting with the first observed claim with a SUD or SMI/SED diagnosis through 11 additional months after the last observed SUD or SMI/SED claim or the end of Medicaid enrollment, whichever comes first. Given that people with SUDs or SMI/SEDs are often underdiagnosed, sensitivity analyses will be performed to identify members with SUD or SMI/SED based on the state's treatment manuals. A sub-group analysis will be conducted for members with an OUD.

Comparison Group

Because the expansion of SMI/SED and/or SUD services was implemented statewide for all MassHealth members, a clear comparison group (i.e., a group that would allow us to estimate a counterfactual scenario of what would have happened in the absence of the Demonstration activities) does not exist. When appropriate and accessible, the All-Payer Claims Database (APCD)[84] will be utilized to compare key care quality and healthcare utilization measures and cost trends among matched individuals with MassHealth, Medicare, and commercial insurance. This comparison would control for external factors at the state level that might impact the use of SMI/SED and/or SUD services.

Study Design

Mixed methods will be used to evaluate the BH component of the Demonstration. To capture the experience of members and their guardians with BH services, interviews will be conducted with a representative group of MassHealth members to map their care and highlight their care-seeking behavior, challenges, and satisfaction with healthcare.

[84] CHIA. (n.d.). *Massachusetts All-Payer Claims Database*. Chiamass.gov. https://www.chiamass.gov/ma-apcd/

Interviews with providers will be conducted to understand processes of care and discharge planning, if and how peer support specialists and psychiatric consultants assisted with connections to outpatient follow-ups after ED admissions.

Several quantitative methods will be used to capture changes in members' utilization, quality, and outcomes due to SMI/SED and SUD services. Interrupted Time Series (ITS), a quasi-experimental approach, will be used to compare trends in care quality measures, healthcare utilization, costs, and outcomes pre- to post-implementation of expanded SUD, SMI/SED, and diversionary services. This design is widely used and is considered one of the most robust quasi-experimental designs. If feasible and when appropriate, ITS models will be performed with controls (i.e., matched individuals with commercial or Medicare insurance) using the APCD. Joint modeling of event counts and survival time[85] will be used to analyze the impact of the diversionary services on reducing ED boarding (defined as ED stay >24 hours after disposition),[86] SUD/OUD services, SMI/SED services on preventable and medically inappropriate ED visits,[86] and preventable BH readmissions to acute inpatient hospitals and residential programs defined as 30-day readmissions to the same or higher level of IMD care.[87] In addition, a repeated cross-sectional design will be used to compare trends in opioid overdoses and opioid deaths in Massachusetts to the rest of the nation.

Study Period

The evaluation will cover the period of 2022-2027 for measures based on qualitative data, descriptive analysis, and measures evaluated using cross-sectional data. The evaluation period will extend from 2015 to 2027 for measures evaluated using ITS; data covering calendar years (CY) 2015 through 2017 will be used as a pre-implementation baseline, 2018 through 2022 as the first phase of implementation, and 2023 through 2027 as the Demonstration period of interest. See Chapter 1 (Executive Summary) Table 1-2 and Table 1-3 for more details.

4.4.2. Data Sources and Collection Methods

Data Sources

MassHealth Administrative Data

The primary data source that will be used to address hypotheses is the MassHealth Medicaid Management Information Systems (MMIS) enrollment, medical claims /encounter files, and pharmacy claims files. (See Section 1.4.1).

All-Payer Claims Database (APCD)[87]

To the extent possible, we will use MA-APCD to control for external factors that might impact SMI/SED and/or SUD services at the state level. MA-APCD is the most comprehensive source of health claims data from public and private payers providing

[85] Cowling, B. J., Hutton, J. L., & Shaw, J. E. H. (2006). Joint modelling of event counts and survival times. *Journal of the Royal Statistical Society: Series C (Applied Statistics)*, *55*(1), 31–39. https://doi.org/10.1111/j.1467-9876.2005.00529.x

[86] Lines, L. M., Li, N. C., Mick, E. O., & Ash, A. S. (2019). Emergency department and primary care use in Massachusetts 5 years after health reform. *Medical care*, *57*(2), 101-108.

[87] CHIA. (n.d.). Massachusetts All-Payer Claims Database. Chiamass.gov. https://www.chiamass.gov/ma-apcd/

insurance to Massachusetts residents and employees. It covers several services, including medical, pharmacy, dental, vision, BH, and specialty services. The database is released annually, and each release covers five years. For example, the current MA-APCD CY2021 dataset covers claims, eligibility, provider, and other required file types submitted for CY2017-2021, plus claims related to services provided in those years that are processed between January and June 2022.

Massachusetts Death Records

To evaluate hypothesis H3-8.1 ("The Demonstration will reduce overdose deaths"), claims data will be linked to Massachusetts Death records held by the Massachusetts Registry of Vital Records and Statistics.

Program Data

If available, BSAS will provide member-level data regarding the utilization of residential rehabilitation services and recovery coach services (i.e., services not covered by MassHealth in the pre-Demonstration period, 2015-2017), to be used in conjunction with MassHealth claims/encounter data to address H3-5.1 (adherence to SUD treatment).

The Public Health Dataset

To the extent possible, we will use the Public Health Data Warehouse (PHD) to evaluate SUD hypothesis H3-8.1 ("The Demonstration will reduce non-fatal overdoses"). The PHD dataset, maintained by the Massachusetts DPH, is a linked dataset created by state statute to facilitate data analysis to inform efforts to reduce opioid overdoses in the state. The dataset links individual-level data from various sources, including vital statistics, medical and pharmacy claims data, hospital discharge records, toxicology reports, ambulance transport records, DPH program enrollment, and BSAS service utilization. Non-fatal opioid overdoses are identified from various sources, such as ambulance transport data, which are unavailable in MassHealth claims data. If the PHD data set is unavailable during the analysis period, information on non-fatal overdoses will be obtained from MMIS data using ICD/Current Procedural Terminology (CPT) codes to identify overdoses, with the limitation that claims data will underestimate the number of opioid overdoses.

The Centers for Disease Control and Prevention (CDC) Wide-ranging Online Data for Epidemiologic Research (WONDER) Database

WONDER is an internet-based publicly available data system intended to further public health research and program evaluation. Information about fatal overdoses is available in the mortality and multiple causes of death databases, which are populated using information from death certificates. Additionally, trends can be stratified at the state level, by year, and/or by several other demographic characteristics. For the Demonstration, we plan to use the WONDER database to compare trends in fatal overdoses in Massachusetts to the rest of the nation. Data on non-fatal and fatal overdoses in Massachusetts will be analyzed from the DPH overdose statistics data.[88]

[88] Department of Public Health. (n.d.). *Current Opioid Statistics*. Mass.gov. https://www.mass.gov/lists/current-opioid-statistics

Member Interviews[89]

Interviews with members and their family members/guardians will provide an understanding of experiences with BH services, unmet service needs, including medical care and housing, barriers to care (including services that meet their linguistic, cultural, and BH needs), service integration, inclusion in discharge and crisis planning, care coordination and experiences with transitions in care. The interview guide will also be informed by the Consumer Assessment of Healthcare Providers and Systems (CAHPS) Mental Health Care Survey.

Provider Interviews[90]

Interviews with providers will provide an understanding of the extent to which the Demonstration facilitates the utilization of peer support specialists and psychiatric consultants in EDs to assist with transitions to clinically appropriate levels of care. Providers will also be interviewed to provide insights on discharge planning to facilitate timely transitions to clinically appropriate BH, physical health, and support services post-discharge from acute psychiatric facilities, 24-hour SUD diversionary services, and mental health diversionary services. Questions will seek to elicit information on processes for assessment of medical needs and HRSNs to be addressed in treatment and discharge planning and suggestions for improved care coordination, amongst other topics.

National Surveys

Utilization of national surveys, including the National Survey on Drug Use and Health, Behavioral Risk Factor Surveillance Systems (BRFSS), National Survey of Substance Abuse Treatment, and National Mental Health Services Survey, allows for a comparison of BH access to care and member's experience in Massachusetts compared other states.

4.4.3. Measures

Outcome measures will be identified in the MassHealth claims/encounter data along with death files and the Public Health data set, using ICD-9/10, CPT, revenue, and NDC codes, as appropriate. Measures align with those listed in the November 2017 State Medicaid Director's letter SMD#17-003 and include but are not limited to:

- Number and percentage of the study population meeting National Quality Forum (NQF) quality measures related to the initiation of treatment, pharmacotherapy use, and follow-up after ED discharge
- Number and percentage of the population utilizing SUD treatment
- Number and percentage of the population utilizing mental health treatment, both children and adults
- Number and percentage of the population utilizing other services (e.g., ED, hospital inpatient, ambulatory, pharmacy)
- Fatal and non-fatal overdoses, overall and opioid specific

[89] CAHPS Mental Health Care Surveys. (n.d.). *CAHPS Experience of Care & Health Outcomes (ECHO) Survey*. Ahrq.gov. https://www.ahrq.gov/cahps/surveys-guidance/echo/index.html

[90] Qualitative data collection and analysis will be conducted by the IE qualitative team.

- Number of medications for opioid use disorder (MOUD) for members with OUD and providers identified by MassHealth administrative data.
- Total cost of care (TCOC) to MassHealth, including costs of inpatient, outpatient (including ED), pharmacy, long-term care, and residential care (including IMD costs). All cost data will be obtained from claims/encounter data. Administrative costs will not be included because they would be constant across groups and years, and our focus is on the marginal change in costs due to BH services. Total costs will be categorized by:
    - Cost related to diagnosis and treatment of SMI/SED
        - SMI/SED IMD costs
        - Other SMI/SED costs
        - Non-SMI/SED medical services costs
    - Cost related to diagnosis and treatment of SUD
        - SUD IMD costs
        - Other SUD costs
        - Non-SUD costs medical services costs
    - Source of treatment cost drivers for beneficiaries in the target population
        - Outpatient costs, non-ED
        - Outpatient costs, ED
        - Inpatient costs
        - Pharmacy costs
        - Long-term care costs

4.4.4. Analysis Methods

Descriptive statistics will be performed for members, including diagnoses and other clinical and demographic characteristics. This analysis will be performed on a quarterly basis and include counts, percentages, means, standard deviation, medians, and 25th and 95th percentiles, as appropriate.

A time-series approach will be used to estimate the marginal changes in evaluation measures over time, starting with the pre-intervention period of 2015-2017, the period covering the 2017-2022 Demonstration, and the period covering the 2022-2027 Demonstration. Segmented regression analysis, using generalized estimating equations, will be used to evaluate trends prior to, between each phase of implementation, and after implementation (including lag periods if warranted, to allow for the full effect of the implementation to occur). Analyses will be conducted with and without adjusting for differences in the risk profile of MassHealth members with SMI/SED and SUD over time. Subgroup analyses will also be performed by geographic region and member risk profiles. For preventable or low acuity non-emergent ED visits and inpatient admissions where services are concentrated among a small number of members, as a primary analysis, a joint modeling of event counts and survival times analyses will be conducted to simultaneously analyze the impact of the SUD/OUD services on the counts and the time intervals between those services, using a Poisson

process framework which incorporates covariate effects and between-patient heterogeneity.[91,92,93] In addition, separate models will be considered to examine rates and survival time separately. To address uncertainties associated with the number of MassHealth members diagnosed with BH conditions, the IE will conduct sensitivity analyses to capture the state and CMS definitions of members with SUD/OUD and SMI/SED.

Member surveys and qualitative data from interviews with members and providers will provide context for quantitative findings. Using an embedded mixed methods approach,[94] we will synthesize themes derived from the qualitative data with the quantitative findings. We will delve into members' and providers' experiences, examining how those experiences may be related to BH policy and practice innovation. Integration of qualitative and quantitative findings will help the evaluation team to provide the context behind both cost and utilization trends and outcomes.

Measures, data sources, and analytic approaches that will be used to address each evaluation hypothesis are presented in Table 4-1. Details on the specifications, numerator, and denominator for key measures are presented in Appendix B.

4.4.5. Limitations

As mentioned above, due to other activities targeting improvements in BH services in the Commonwealth, isolating the impact of the Demonstration from other activities, including the BH Roadmap and ACO initiatives, may be difficult. The evaluation team will use mixed methods to map members' care-seeking behaviors, challenges, satisfaction, and outcomes and, when possible, attribute these changes to the Demonstration compared to other state initiatives.

The expansion of SMI/SED and/or SUD services at the statewide level for all MassHealth members limits the availability of a clear comparison group. When appropriate, and if access to data is feasible, the evaluation team will use the MA-APCD to compare key care quality and healthcare utilization measures and cost trends among matched individuals with MassHealth, Medicare, and commercial insurance. This would allow us to control for external factors at the state level that might impact the use of SMI/SED and/or SUD services.

[91] Cowling, B. J., Hutton, J. L., & Shaw, J. E. H. (2006). Joint modeling of event counts and survival times. Journal of the Royal Statistical Society: Series C (Applied Statistics), 55(1), 31–39. doi:10.1111/j.1467-9876.2005.00529.x

[92] Fleming, T.R., & Harrington, D. P. (1991). Counting Processes and Survival Analysis. Wiley Series in Probability and Statistics. https://doi.org/10.1002/9781118150672

[93] Wu, L., Meng, Y., Kong, X., & Zou, Y. (2022). Incorporating survival analysis into the safety effectiveness evaluation of treatments: Jointly modeling crash counts and time intervals between crashes. Journal of Transportation Safety &Amp; Security, 14(2), 338–358. https://doi.org/10.1080/19439962.2020.1786871

[94] Creswell, J. W., & Clark, V. L. P. (2007). Designing and Conducting Mixed Methods Research. Thousand Oaks, CA: *Sage Publications.*

5. Safety Net Care Pool

5.1. Overview of Safety Net Care Pool (SNCP) Policy Domain

The Demonstration includes the continuation of many longstanding authorities and programs that the Commonwealth has implemented in previous Demonstrations. The SNCP policy domain of this Demonstration includes certain continuing programs that aim to provide uncompensated care payments to safety net providers that serve Medicaid members and low-income, uninsured individuals.[95]

Initiatives for the SNCP in previous Demonstrations have included "providing residual provider funding for uncompensated care, and care for Medicaid Fee-For-Service (FFS), Medicaid managed care, Commonwealth Care and low-income uninsured individuals, as well as infrastructure expenditures and access to certain state health programs related to vulnerable individuals, including low-income populations," all of which are described further in Attachment E of the STC.[96]

During the 2017-2022 Demonstration, the expenditure categories for the SNCP included the Disproportionate Share Hospital-like (DSH-like) Pool (which includes Safety Net Provider Payments (SNPP), the Uncompensated Care (UC) Pool for charity care for uninsured and underinsured, the Delivery System Reform Incentive Payment (DSRIP) Program, Public Hospital Transformation and Incentive Initiatives (PHTII),[97] and DSHP-Health Connector Subsidies.

As described in more detail below, MassHealth will continue to have expenditure authority of the DSH-like Pool and the UC Pool funding in the 2022-2027 Demonstration (as well as close-out expenditure authority for 2017-2022 Demonstration programs).[98]

5.1.1. SNCP Policy Domain Goals

A key goal of the 2022-2027 Demonstration includes supporting safety net providers in the Commonwealth with continuous funding through multiple mechanisms while furthering efforts to increase provider accountability. In addition, a significant objective of the overall Demonstration is for the SNCP to align funding with MassHealth's accountable care strategies and expectations and to create and promote a sustainable structure that allows ongoing funding to continue to support safety net providers.[99] The SNCP policy aims to increase access to care to serve vulnerable populations (particularly Medicaid-covered or uninsured populations) with quality healthcare within the Commonwealth by funding participating safety net providers.

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[95] Text imported with modifications from page 2: Centers for Medicare & Medicaid Services. (2022, September 28). *CMS Guidance, Approval Letter, Waiver Authority, Expenditure Authority, Special Terms and Conditions.* Mass.gov. https://www.mass.gov/doc/masshealth-extension-approval/download

[96] See STC 11.1, page 77-78; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[97] See 2017-2022 Demonstration STC 63-64 (as included in final STC amendments approved August 11, 2022). ; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[98] See STC 11.1.(a) – 11.1.(e), page 78; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[99] See STC 2 on page 3; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

5.1.2. SNCP Policy Components and Desired Outcomes

The desired primary outcomes of the SNCP are to ensure the sustainability of various safety net providers and to maintain or increase members' ability to access accountable care. Better access to care may be evidenced by increased use of preventative, primary, and necessary specialist care. Ultimately, the SNCP will contribute to maintaining the Commonwealth's overall health status and improving health equity while reducing per-member-per-month (PMPM) costs and supporting the Medicaid program's financial sustainability.

Payment Policy Initiatives

As the SNCP policy continues through the 2022-2027 Demonstration, the SNCP funding and data sources have been adapted to better fit the needs of the Commonwealth. The SNCP policy initiatives for the 2022-2027 Demonstration include updated payment initiatives to align with the current policy goals. The DSH-like Pool will offset Medicaid underpayment and uncompensated care. This includes SNPP tied to Accountable Care Organization (ACO) quality and Total Cost of Care (TCOC) accountability. During this period, 20 percent of Safety Net Hospitals' (SNH) SNPP payments will be risk-based. From October 2022 to December 2027, the 23 SNHs[100] listed below will be eligible for SNPPs. There will also be a continuation of access to the Uncompensated Care (UC) Pool from the previous Demonstration.

SNHs

1. Baystate Franklin Medical Center
2. Baystate Medical Center
3. Baystate Noble Hospital
4. Baystate Wing Hospital
5. Berkshire Medical Center
6. Boston Medical Center
7. Heywood Hospital
8. Holyoke Medical Center
9. Lawrence General Hospital
10. Lowell General Hospital
11. Martha's Vineyard Hospital
12. Mercy Medical Center
13. MetroWest Medical Center
14. North Shore Medical Center
15. Signature Healthcare Brockton Hospital
16. Shriners Hospitals for Children – Boston
17. Shriners Hospitals for Children – Springfield
18. Southcoast Hospitals Group
19. Steward Carney Hospital Inc.
20. Steward Good Samaritan Medical Center
21. Steward Holy Family Hospital Inc.
22. Steward Morton Hospital
23. Tufts Medical Center

[100] This number was increased from 14 in the 2017-2022 Demonstration. Pay eligibility will be extended to 9 additional hospitals as Safety Net Provider funding increases by $125M annually.

DSH-like Pool

The expenditures from the DSH-like Pool support acute hospitals and health systems, non-acute hospitals, and other providers that support uncompensated care for Medicaid FFS, low-income uninsured individuals, and expenditures for individuals who are inpatient in an Institution for Mental Disease (IMD).[101] Specifically, the DSH-like Pool may include expenses for Public Service Hospital Safety Net Care payments; Health Safety Net Trust Fund payments to hospitals and community health centers (CHC)s; payments to IMDs, DPH hospitals, and DMH hospitals for uncompensated care; SNPPs to qualifying hospitals; and close-out SNPP expenditures.[102] SNPPs support hospitals serving many Medicaid and uninsured individuals; such payments are specifically intended to support the operational needs of these organizations.[103]

Uncompensated Care Pool

If the DSH-like funding is exhausted, participating SNHs and safety net providers will have access to the UC Pool to cover charity care costs, which can be utilized for specific low-income and uninsured members. This also includes the DPH and DMH hospital expenditures for uninsured members. Ultimately, the UC Pool payments are available to cover the cost of care provided free of charge to qualifying individuals who adhere to the provider's charity care policy.[104]

5.1.3. SNCP Policy Domain Implementation Plans and Timeline

The 2022-2027 Demonstration and its inclusion of the long-standing SNCP policy aim to support the Commonwealth's safety net sustainably. The hospital assessment covers programs linked to SNCP as well as other programs that are not listed in this domain; the Demonstration has been updated to support the outlined programs and initiatives related explicitly to SNCP from October 2022 to December 2027. This period overlaps with closeout payments for some SNCP expenditure authorities from the prior Demonstration: (1) the DSRIP payments will end on March 31, 2023, with close-out payments for SNPP tied to DSRIP accountability to end on December 31, 2024; and (2) the PHTII for Cambridge Health Alliance (CHA) will close out payment by December 31, 2023.

[101] See STC 11.2.(a), page 78; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[102] See STC 11.2.(a), page 79; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

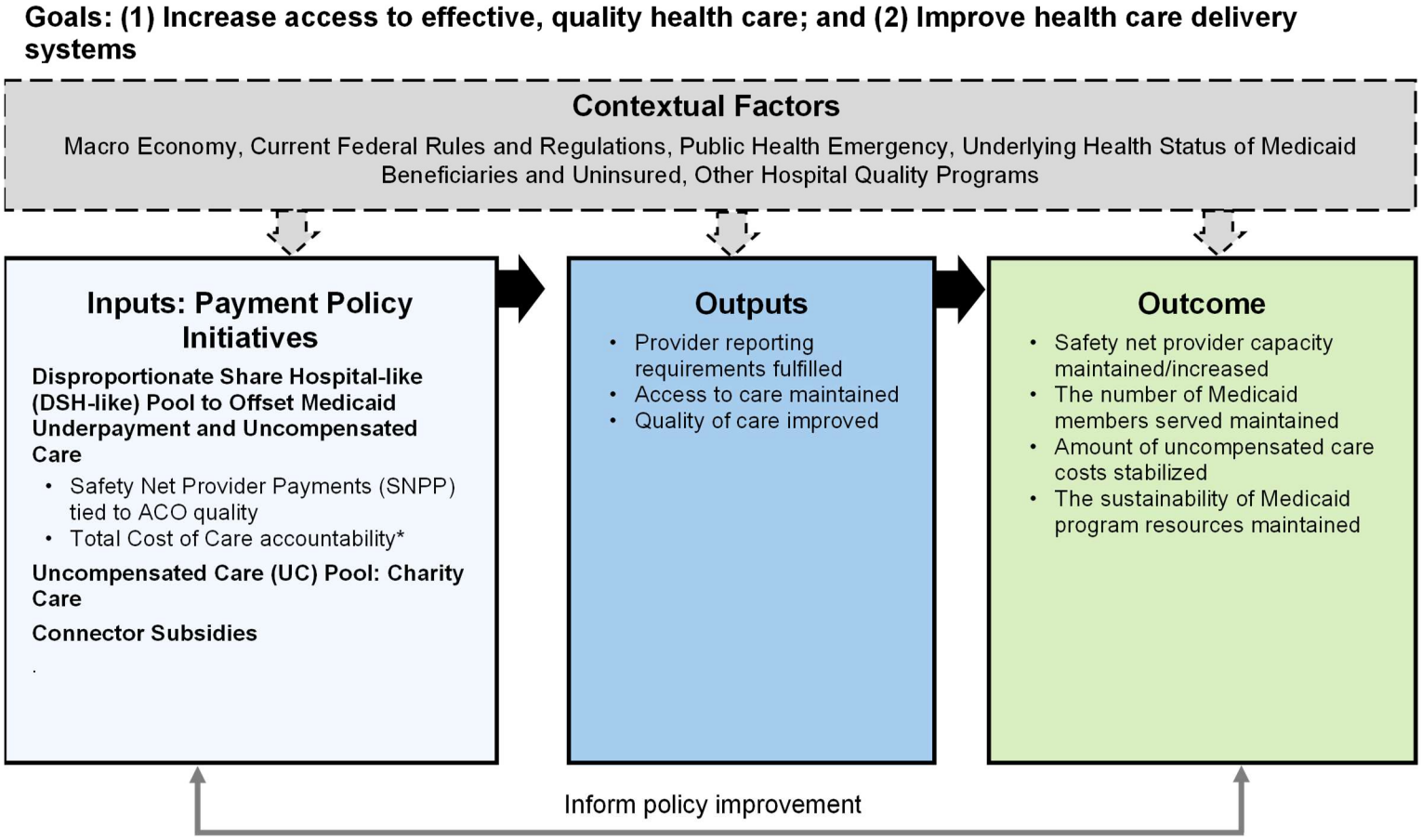
[103] See STC 11.2.(b), page 79; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[104] See STC 11.3, page 80; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

5.2. Logic Model

The logic model in Figure 5-1 links the SNCP Demonstration Goals to the Demonstration Inputs, Implementation Activities (e.g., funding pool), Outputs, and Outcomes (e.g., member access, quality of care, amount of uncompensated care use, and financial sustainability). This logic guides the RQs and hypotheses that follow.

Figure 5-1: Logic Model for the SNCP Component of the Demonstration



*The SNPP will continue for the 23 safety net hospitals from April 2023 to December 2027.

5.3. Research Questions and Hypotheses

Table 5-1 summarizes the SNCP evaluation RQs and associated hypotheses. It also includes the study populations, data sources, measures, and analytic methods, which are detailed in the following sections. As guided by the logic model, the research questions focus on how safety net providers' capacity is maintained and increased to allow access by Medicaid populations. Because some SNCP payment is tied to ACO quality measure and cost, the evaluation will identify if the SNCP payment supports better quality of care and member experiences at SNHs.

Table 5-1: Research Questions and Hypotheses for SNCP

Research Questions[a]	Hypotheses	Data Sources (Evaluation Period)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
RQ4-1 What is the impact of safety net funding investments on SNHs' quality of services?	H4-1.1 The SNCP payment will result in improved care quality at SNHs.	Medicaid administrative data (2018-2027)	SNHs	ACO quality measures	Descriptive analysis; Observed-to-expected ratio (O-E ratio); Quasi-Experimental Design (QED)
RQ4-2 What were the overall experiences of members in receiving services from SNHs?	H4-2.1 Medicaid members will report better care experiences.	Member survey (if feasible, 2025, 2027); Member interviews (2024-2025; 2026-2027)	Medicaid members receiving care from SNHs (for interviews, n=~30; for surveys – if feasible, n=~1,200)	Topical areas: Overall and equitable access to services, Quality of care, Overall satisfaction	Descriptive analysis; QED; Thematic analysis
RQ4-3 How effective were supplemental payments authorized through the Demonstration in supporting safety net providers?	H4-3.1 The SNCP funding continued to maintain or improve safety net providers' capabilities to serve vulnerable individuals. H4-3.2 Supplemental payments to SNHs through the DSH	Provider interviews (2024, 2026); Uniform Medicaid & Uncompensated Care Cost & Charge Report (UCCR)* (2018-2027)	SNHs and other safety net providers (n ≤ 15)	Qualitative information about provider experiences (e.g., quality of care reporting requirements, quality improvement, adequacy of providers, UC); UC costs before and during the Demonstration	Thematic analysis; Program cost analysis

Research Questions[a]	Hypotheses	Data Sources (Evaluation Period)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
	pool reduced the total amount of UC.				

*If MassHealth does not need to use UC pool funding, the analysis using UCCR will not be conducted.
a. Research questions developed in response to STCs sections 11.1-11.6; 1115 MassHealth Demonstration ("Waiver") | Mass.gov
b. Data Sources are described in section 5.4.2, “Data Sources and Collection Methods,” and section 1.4.1, “Summary of Data Sources.”
c. Analysis methods are described in section 5.4.4, “Analysis Methods.”

5.4. Data and Methods

5.4.1. Study Populations

The study population will be at two levels.

- Organization Level: The study population includes all SNHs and other safety net providers receiving SNCP funding. The focus will be on SNHs.
- Member Level: The population is MassHealth members who receive healthcare from SNHs during the Demonstration. Note that this evaluation focuses on the Medicaid population even if SNHs also treat uninsured members. Member-level analyses will be tied to the SNHs that are accountable for ACO quality of care and cost expectations.

No comparison group will be used since all Massachusetts SNHs and safety net providers are included in the Demonstration and will be evaluated.

5.4.2. Data Sources and Collection Methods

The evaluation design for SNCP will use mixed methods to understand how vulnerable populations' access to care and safety net providers' quality of healthcare change over time. The evaluation will also explore the impact of the SNCP in supporting the financial sustainability of the SNHs.

Data Sources

Five data sources will be used for the SNCP evaluation:

Medicaid Administrative Data

As discussed in earlier chapters, Medicaid administrative data (e.g., enrollment, encounter) will be used to evaluate the quality of care.

Member Interviews

The current ACO member survey does not explicitly target members receiving care from SNHs and other safety net providers. About 30 randomly selected MassHealth members from SNHs and other safety net providers will be interviewed to understand their experiences with providers, focusing on service access and quality of care. More or fewer members will be interviewed, depending on the data saturation when no new themes are identified by the data.

Member Experience Survey (If feasible)

Member survey data provides more population-based member experiences. The evaluation may utilize MassHealth member-level data from the existing ACO survey, based on the Clinician Group Consumer Assessment of Health Plan and Provider Systems (CG-CAHPS), administered through MassHealth. MassHealth also obtains hospital survey data (H-CAHPS) through CMS (an acute hospital requirement), which includes SNHs. The data, however, are all-payer, aggregated, and de-identified. It is

currently not possible to identify and obtain MassHealth member-level results. We are exploring options to obtain data or to survey MassHealth members in the hospital setting. At this stage, interview data will be the primary source for member experiences.

Safety Net Provider Organization Interviews

The evaluation will conduct interviews with the 23 SNHs and other safety net providers, involving key administrators (e.g., financial officers), staff, and others about their hospitals' services for Medicaid members and uninsured individuals. It will explore organizational experiences with fulfilling CMS and MassHealth reporting requirements, meeting quality standards (if applicable), serving vulnerable populations, and maintaining financial sustainability.

Uniform Medicaid and Uncompensated Care Cost and Charge Reports (UCCR)[105]

MassHealth requires hospitals to submit cost, charge, and member day data via UCCR. This data is used to ensure compliance with the Uncompensated Care Cost Limit Protocol approved by CMS on December 11, 2013. In addition, MassHealth uses the data to calculate the preliminary payment amounts for certain supplemental payments. These reports contain cost data from Medicare cost reports, in addition to data provided by MassHealth, on supplemental payments to SNHs.

5.4.3. Measures

Quantitative measures will be used to assess the quality of care among SNHs for Medicaid members. Qualitative measures will capture the perceptions of access and quality of care among Medicaid members receiving services from safety net providers, including SNHs. Qualitative measures will also be used to examine SNHs' organizational domains, such as fulfilling reporting requirements, adequacy of clinicians, and UC.

5.4.4. Analysis Methods

Quasi-Experimental Design (QED) will be used to analyze quantitative data for this evaluation. When Medicaid administrative data are used, the analysis will use the Observed-to-Expected ratio (O-E ratio) as described in Chapter 3 (Delivery System Reform). The O-E ratio can help determine whether there is a change in quality related to policy changes. Interrupted time series (ITS) analysis without a comparison group will also be conducted. Subgroup analyses will be conducted for adult and child members, respectively. The analyses will draw on covariates at member, organization/provider, and regional levels. The examples of covariates are member demographic and clinical characteristics (e.g., age, sex, disability status, rating categories, federal poverty level), provider characteristics (e.g., teaching status, ownership, size of beds), regional characteristics (e.g., region, healthcare resources), and indicators of time. The IE will explore the use of imputation method or sensitivity analysis related to race/ethnicity data and include demographic characteristics in our analysis, as appropriate.

[105] Again, if MassHealth does not use UC, the UCCR report data will not be analyzed.

The thematic analyses of the qualitative data will supplement these findings. The methods for the thematic analyses are described in Chapter 3 (Delivery System Reform) Section 3.4.2 Data Sources and Collection Methods. If feasible, member survey data from the existing ACO survey may be analyzed for members who have received care from SNHs. Descriptive statistics analysis will be conducted to profile member experiences.

Using an embedded mixed methods approach, we will synthesize the quantitative and qualitative data. We will solicit an in-depth nuanced understanding of members' and providers' experiences, examine how those experiences may be related to SNCP, and use these findings to explain pertinent trends and outcomes. For example, we expect better health outcomes identified through quantitative analysis will be associated with better access to care as a result of the SNCP payment. Conversely, preliminary quantitative findings from the analysis of data from early in the Demonstration period can generate questions regarding underlying mechanisms that can then be explored in subsequent qualitative data collection and analysis.

5.4.5. Limitations

The most significant limitation of the evaluation is that the pre-demonstration period (the baseline performance) is still within the Public Health Emergency (PHE). Access and quality of care performance of SNHs may have been impacted during the PHE, resulting from financial, workforce, and technology issues. This may lead to less optimal performance compared to normal circumstances, which sets up a skewed baseline performance and may bias the SNCP policy impact. Similar to other domains, pre-PHE analysis periods will be included to establish the baseline performance. A second limitation is that the current design does not fully account for competing and reinforcing initiatives (e.g., BH Roadmap Initiatives, Hospital Quality and Equity Initiatives (HQEI)) that may impact provider performance during the evaluation period. The results of the evaluation will need to be explained in the context of other initiatives administered by the Commonwealth. Qualitative information from members and providers is expected to reveal more details of the payment impact.

6. Workforce Initiatives

6.1. Overview of Workforce Initiatives (WI) Policy Domain[106]

Similar to national trends, Massachusetts is experiencing a shortage of primary care providers (PCPs) that, without intervention, will continue to grow.[107] Additionally, more than half (56.8 percent) of adults who sought treatment for behavioral health (BH) reported challenges in finding a BH provider.[108] Through the 2022-2027 Demonstration, the Commonwealth is committed to making significant investments to extend and improve primary care and BH services and access to care.[109] In addition to the transition of primary care payment in the Accountable Care Organization (ACO) program to a new sub-capitation payment model and the Commonwealth's implementation of the BH Roadmap, the Commonwealth is investing in three Workforce Initiatives (WI) programs authorized by the Demonstration to address shortages of qualified providers serving MassHealth members. The WIs are categorized into student loan repayment programs and the family nurse practitioner (FNP) residency grant program.

Primary Care Student Loan Repayment Program

This program will offer the following:

1. Up to $100,000 for PCPs who commit to a four-year full-time service obligation in a community-based setting, serving at least 40 percent MassHealth and/or uninsured members.
2. Up to $50,000 for advanced practice registered nurses, pediatric clinical nurse specialists, nurse practitioners (NP), and physician assistants (PA), per practitioner, who commit to a four-year full-time service obligation in a community-based setting serving at least 40 percent MassHealth and/or uninsured members.

Behavioral Health (BH) Student Loan Repayment Program

This program will offer the following:

1. For psychiatrists and NPs with prescribing privileges, up to $300,000 per practitioner who makes a four-year full-time commitment to maintaining a personal practice panel or working at an organization with a panel that includes at least 40 percent MassHealth and/or uninsured members.

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[106] Part of Section 6.1 is verbatim from the STC and extension request; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[107] Petterson, Stephen M; Cai, Angela; Moore, Miranda; Bazemore, Andrew. (2013, September). *State-level projections of primary care workforce, 2010-2030.* Graham-Center.org. https://www.graham-center.org/content/dam/rgc/documents/maps-data-tools/state-collections/workforce-projections/Massachusetts.pdf

[108] Blue Cross Blue Shield Foundation of Massachusetts. (2018). *Access to Care or Mental Health and Substance Use Disorders is a Challenge for Many in Massachusetts.* MHRS_2018_MH SUD Summary_final.pdf (bluecrossmafoundation.org)

[109] Commonwealth of Massachusetts. (2021, December 27). *MA 1115 Extension Request Updated, page 7*. Mass.gov. https://www.mass.gov/doc/1115-waiver-extension-request/download.

2. Up to $50,000 per practitioner for licensed BH clinicians or masters-prepared clinicians (clinicians who have completed masters-level training but do not yet have the necessary licensure to practice independently) intending to obtain BH practitioner licensure within one year of the award and who make a four-year commitment to practice full-time in a community-based setting serving at least 40 percent of MassHealth and/or uninsured members.

Family Nurse Practitioner Residency Grant Program

The Commonwealth will provide up to $105,000 per residency slot to allow Community Health Centers (CHCs), whose patient populations are made up of at least 40 percent MassHealth members, to support up to 10 FNP residency slots annually for four years.

Table 6-1: Workforce Funding by Initiative (In Millions)

Initiative	Demonstration Year (DY) 28 / Performance Year (PY) 1	DY 29 / PY 2	DY 30 / PY 3	DY 31 / PY 4	DY32 / PY 5	Total
BH Student Loan Repayment	$2.50M	$5.00M	$5.00M	$5.00M	$2.50M	$20.00M
Primary Care Student Loan Repayment	$2.30M	$4.60M	$4.60M	$4.60M	$2.30M	$18.40M
FNP Residency Grant	$1.21M	$1.21M	$1.21M	$1.21M	$0M	$4.84M
Total	$6.01M	$10.81M	$10.81M	$10.81M	$4.80M	$43.24M

Source: STC Table 12 page 102. https://www.mass.gov/doc/stcs-masshealth-1115-waiver-extension-1/download, https://www.mass.gov/service-details/1115-masshealth-demonstration-waiver.
*Note: If the investment amount changes in the future, this table will be updated accordingly.

The WI programs were informed by lessons learned from the 2017-2022 Demonstration, where the Commonwealth was able to leverage the availability of $115 million of the $1.8 billion in expenditure authority for the Massachusetts Delivery System Reform Incentive Payment (DSRIP) program to fund eight Statewide Investments (SWI) intended to build and strengthen healthcare infrastructure and workforce capacity across Massachusetts to support the success of ACOs, and Community Partners (CPs). The SWIs from the Demonstration fell into three categories and included:

1. Building and Training the Primary Care and BH Workforce: This set of investments supported the recruitment, retention, and training of PCPs, BH providers, and the frontline healthcare workforce in community-based settings.
2. Capacity Building for ACOs, CPs, and Providers: This set of investments provided direct technical assistance and shared learning opportunities for ACOs and CPs, as well as support for providers who were not yet participating in alternative payment methods (APM) to prepare for APM adoption in the future.
3. Initiatives to Address Statewide Gaps in Care Delivery: This set of investments improved the care provided to members with specific BH and accessibility needs through technology solutions and grant funding opportunities.

Under the 2017-2022 Demonstration, DSRIP-funded student loan repayment programs awarded PCPs and BH providers in these community-based primary care and BH settings with student loan repayments of up to $30,000 or $50,000, depending on the provider type, in exchange for a four-year service commitment. The SWIs promoted new opportunities for primary care and BH providers to practice within communities, stimulated novel initiatives to coordinate and integrate care across settings, and pioneered provider strategies to manage performance and population health. These investments addressed gaps in the statewide delivery system and strengthened its capacity to deliver integrated, high-quality care for all members.[110]

Student loan repayment is a promising tool in addressing healthcare workforce challenges, which are particularly acute for diverse and culturally competent clinicians.[111] DSRIP-funded student loan repayment programs have shown efficacy in achieving retention in high-Medicaid community-based settings. Preliminary results show that 94 percent of primary care and BH providers who received these awards in 2018 and 2019, and 98 percent of masters-prepared BH providers who received those awards in 2018, remained employed in community-based settings.[112] In addition, DSRIP funding supported a grant program for CHCs to create or expand FNP residency programs. CHCs that implement FNP residency programs can better recruit and retain FNPs who complete the residencies.[113] Over the first three cycles of funding, nine different CHCs utilized the DSRIP funding to support 30 FNP residency slots, and 91 percent of FNP residents who completed their residencies accepted full-time positions in CHCs.[114]

6.1.1. WI Policy Domain Goals

WI programs aim to support workforce recruitment and retention and promote the increased availability of certain healthcare practitioners to address shortages of qualified providers (both primary care and BH workforce) serving Medicaid beneficiaries. The mounting shortage of PCPs is evident, as mentioned in a report to the Association of American Medical Colleges, where nationally, a shortage of between 17,900 and 48,000 PCPs was projected for 2034.[115] Additionally, as is the case across the country, the Commonwealth is experiencing a dire shortage of BH clinicians, including prescribers, who accept public or private insurance. The need is especially

[110] Commonwealth of Massachusetts. (2021, December 27). *MA 1115 Extension Request Updated.* Mass.gov. https://www.mass.gov/doc/1115-waiver-extension-request/download.

[111] Garcia, A. N., Kuo, T., Arangua, L., & Pérez-Stable, E. J. (2018). Factors associated with medical school graduates' intention to work with underserved populations: policy implications for advancing workforce diversity. *Academic medicine: journal of the Association of American Medical Colleges, 93*(1), 82. Retrieved from: Factors Associated With Medical School Graduates' Intention to Work With Underserved Populations: Policy Implications for Advancing Workforce Diversity - PMC (nih.gov)

[112] Commonwealth of Massachusetts. (2021, December 27). *MA 1115 Extension Request Updated, page 38 Internal MassHealth data.* Mass.gov. https://www.mass.gov/doc/1115-waiver-extension-request/download.

[113] Flinter, M. M., & Bamrick, K. (2017). *Training the next generation: Residency and fellowship programs for nurse practitioners in community health centers.* Community Health Center, Incorporated, and the Weitzman Institute. https://www.weitzmaninstitute.org/sites/default/files/NPResidencyBook/NPResidencyBook.pdf

[114] Commonwealth of Massachusetts. (2021, December 27). *Internal MassHealth Data, MA 1115 Extension Request*, *page 38*. Mass.gov. https://www.mass.gov/doc/1115-waiver-extension-request/download

[115] Markit, I. H. S. (2017). *The complexities of physician supply and demand: Projections from 2015 to 2030.* Association of American Medical Colleges. Retrieved Feb 20, 2023, from The Complexities of Physician Supply and Demand: Projections From 2019 to 2034 (aamc.org)

great in the Medicaid space. A robust and diverse workforce is essential for the success of the Commonwealth's BH Roadmap,[116] as addressing BH needs requires skilled, compassionate providers and staff who can provide culturally responsive, evidence-based treatment.

Three programs under the 2022-2027 Demonstration continue from the eight SWI programs under the 2017-2022 Demonstration with either similar or higher financial incentives. Through the WI programs, the Commonwealth will support workforce recruitment and retention and promote the increased availability of certain healthcare practitioners to serve Medicaid members.

6.1.2. WI Policy Components and Desired Outcomes

The 2022-2027 WI consists of three programs described above. The desired outcomes are to increase the primary care and BH workforce, particularly those in community-based clinical settings. Efforts to increase investment in primary care and incentivize enhanced care delivery expectations (e.g., BH integration) while offering providers greater flexibility through the ACO primary care sub-capitation program (see Chapter 3 (Delivery System Reform)) are also expected to advance the desired outcomes of the WI Policy Domain. Ultimately, it is hoped that members' access to care and their outcomes will improve, and utilization of unplanned institutionalized care will drop. In addition, a goal of these initiatives is to further diversify the workforce by prioritizing applicants with cultural and linguistic competence to better reflect and serve the needs of the MassHealth population.

6.1.3. WI Policy Domain Implementation Plans and Timeline

The three programs will continue from the last Demonstration with the same or increased financial incentives. The Commonwealth anticipates launching the FNP residency grant program in CY2023 and the student loan repayment programs in CY2024.

6.2. Logic Model

The WI logic model in Figure ***6-1*** links the Demonstration Goals to inputs, implementation activities, outputs, and outcome(s)/impact. The WI programs are designed to increase the number of primary care and BH providers and improve workforce diversity, which may improve clinician recruitment and reduce provider burdens and turnover. Subsequently, Medicaid members will have a better experience of care (e.g., more choices of providers and more timely access to services). Given existing evidence,[117,118] better access will lead to more preventive care and less inpatient or ED use.

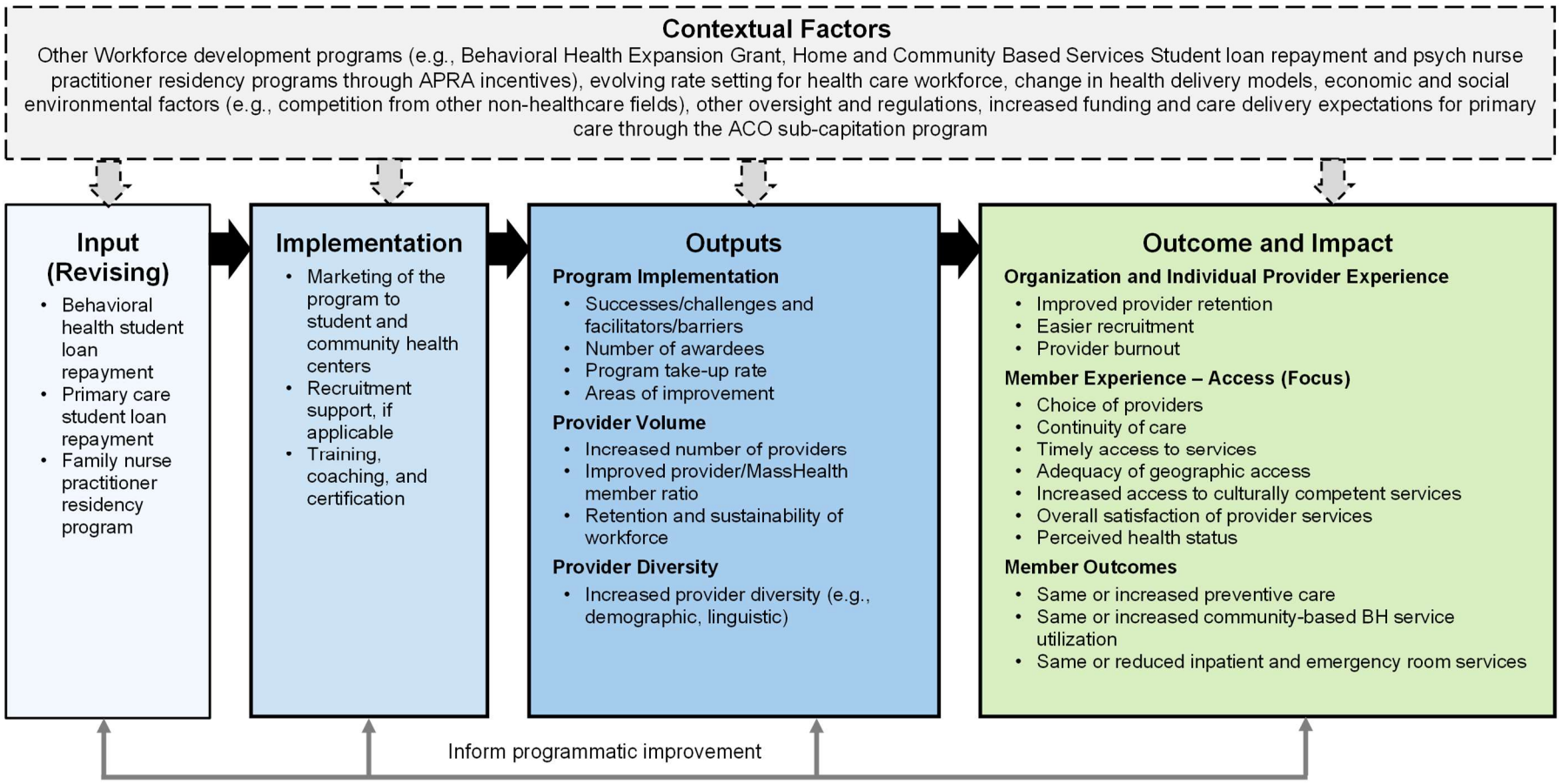
[116] Commonwealth of Massachusetts. (2021). Roadmap for Behavioral Health Reform. Mass.gov. https://www.mass.gov/service-details/roadmap-for-behavioralhealth-reform

[117] Yalamanchi, P., & Blythe, M. et al. (2022). The Evolving Role of Advanced Practice Providers in Otolaryngology: Improving Patient Access and Patient Satisfaction. *Otolaryngology-Head and Neck Surgery.* 166(10), 6-9

[118] Chen, M. & Kiechle, J. et al (2019). Use of Advanced Practice Providers to Improve Patient Access in Urology. *Urology Practice. 6*(3), 151-14

Figure* 6-1*: Logic Model for the WI Component of the Demonstration

Goals: (1) Expand primary care, behavioral health, and family nurse practitioner workforce; and (2) increase access to providers among MassHealth members and the uninsured population



6.3. Research Questions and Hypotheses

Table 6-2 summarizes the WI evaluation RQs and associated hypotheses, study populations, data sources, measures, and analytic methods. Further details on the data sources, measures, and proposed analytic methods are provided in the following sections. The RQs are related to implementation effectiveness, provider experiences, member access and outcomes, and financial sustainability.

Table 6-2: Research Questions and Hypotheses for WI

Research Questions[a]	Hypotheses	Data Sources (Evaluation Period)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
RQ5-1 What actions were taken to implement the three WIs, and what lessons were learned from the implementation ?	H5-1.1 The Commonwealth worked with vendors to implement the program as intended (e.g., market the programs, release clear roles and expectations, develop policies and procedures, make payments promptly, provide operational oversight, and process applications). H5-1.2 Several lessons were learned from implementing these WI programs.	Program documents (ongoing); Qualitative interviews with providers (2024-2025; 2026-2027); WI program administrator interviews and/or open-ended surveys (2024-2025; 2026-2027)	Applicants (both awarded and non-awarded eligible) for WI programs (n ≤ 30); MassHealth WI staff and WI vendors (n=5); Community-based clinical setting administrators (n ≤ 30); Individual PC providers, BH providers, and FNPs (n ≤ 30 combined across different provider types) (Please note that awarded applicants may be individual providers during interviews, so the total number of interviewees is not a direct addition to the number of interviewees for each type of interviewees.)	**H5-1.1** Number of applicants by WI program; Number of accepted applicants; Number (and percentage) of applicants who were accepted and signed a contract; Number (and percentage) of applicants who were accepted and received either a partial or full payment to their loan servicer as outlined in the contract; Number (and percentage) of applicants accepted in the program and completed the 4-year service obligation; Information on whether MassHealth released policy and procedures, made payments, provided operational oversight, and processed applications on time and as planned	Descriptive statistics (provider, administrators, staff); Thematic analysis (applicants, provider, MassHealth program staff, or vendor representative)

Research Questions[a]	Hypotheses	Data Sources (Evaluation Period)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
				H5-1.2 Information to document the impact of these initiatives on employer organizations' experience and the impact of these initiatives on recruitment, retention, or attrition; Barriers and facilitators/Lessons learned about implementation (e.g., recruitment, education/training catering to serve Medicaid and uninsured population in community clinical settings, transparency of payment such as loan repayment, adequacy of incentives, adequacy of FNP resident grant program slots, the influence of other student loan payments)	
RQ5-2 Did the WI programs increase the volume and diversity of the provider workforce in community-based settings?	H5-2.1 Implementing the WI programs improved providers' willingness to practice in community-based settings. H5-2.2 Offering BH student loan repayment increased the volume and diversity of psychiatrists and NPs with prescribing privileges and licensed BH clinicians or masters-prepared clinicians	Program documents (ongoing); WI program administrator and vendor interviews and/or open-ended surveys (2024-2025; 2026-2027); Provider (Workforce) survey (2025 and 2027); Administrator and provider interviews (2024-2025; 2026-2027)	Applicants (both awarded and non-awarded eligible) for WI programs ($n \leq 30$); MassHealth WI staff and WI vendors ($n \leq 5$); Community-based clinical setting administrators ($n \leq 30$); Individual PC providers, BH providers, and FNPs ($n \leq 30$ combined across different provider types); Providers targeted by the WI programs and providers that would	**H5-2.1** Number (and percentage) of accepted applicants who dropped out before completing the four-year commitment (Supplemented by qualitative information on why); Number (and percentage) of accepted applicants who changed organizations during their service commitment period (Supplemented by qualitative information on why);	Descriptive analyses (Provider); Thematic analysis (Individual provider (applicants/staff); Conjoint analysis (Incentive level); Market simulation to explore the best approach to engage more providers to meet the WI objectives (providers)

Research Questions[a]	Hypotheses	Data Sources (Evaluation Period)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
	practicing in community-based clinical settings. H5-2.3 Offering primary care student loan repayment increased the volume and diversity of PCPs, advanced practice registered nurses, pediatric clinical nurse specialists, NPs, and PAs practicing in a community-based clinical setting. H5-2.4 Offering an FNP residency grant program increased the volume of FNPs in CHCs serving at least 40 percent MassHealth members. H5-2.5 The WI programs improved providers' willingness to practice in community-based settings, as compared to direct intervention, such as direct rate increase.		be eligible for WI program (e.g., medical students) in the future (n ≤ 1,500)	Percentage of accepted applicants who stayed employed at their organization (at one year, two years, three years, and four years, and post-completion of the service obligation, subject to data availability and quality) – Supplemented by qualitative information on why; Qualitative information from students regarding how loan forgiveness could affect their decision to practice in community-based clinical settings; **H5-2.2** Number of psychiatrists and NPs with prescribing privileges in community-based settings serving at least 40 percent of Medicaid members or uninsured individuals, supported by the WI programs by provider demographics, language, region, degree); Number of BH practitioners licensed in a community-based setting serving at least 40 percent of MassHealth and/or uninsured members, supported by the WI programs (and by demographics, language, region, degree, year); The ratio of BH providers (i.e., psychiatrists and NPs with	

Research Questions[a]	Hypotheses	Data Sources (Evaluation Period)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
				prescribing privileges, licensed BH clinicians, and master-level clinicians) in community-based settings to MassHealth members with BH needs (and by demographics, language, race/ethnicity, region, provider type, and incentive type by year); **H5-2.3** Number of PCPs, advanced practice registered nurses, pediatric clinical nurse specialists, NPs, and PAs in a community-based setting serving at least 40 percent MassHealth and/or uninsured members, supported by the WI programs (and by demographics, language, region, year); The ratio of PCPs (e.g., PCPs, advanced practice registered nurses, etc.) in community-based clinical settings to MassHealth members (and by demographics, language, region, degree, provider type, and incentive type) by year; **H5-2.4** Number of FNPs in CHCs with at least 40 percent of member populations being MassHealth members, supported by the WI programs (and by demographics, linguistic, region) by year;	

Research Questions[a]	Hypotheses	Data Sources (Evaluation Period)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
				The ratio of FNPs in CHCs to MassHealth members (and by demographics, language, region, incentive type) by year; **H5-2.5** Topical areas about interviews with providers; The relative importance/preference of potential incentives to improve providers' participation and engagement in community-based clinical settings; Overall utilities of each scenario; Provider experiences	
RQ5-3 Did WI programs improve MassHealth members' access to and experiences with healthcare?	H5-3.1 WI programs improved MassHealth members' access to covered services.	Member Interviews/focus groups (2024-2025; 2026-2027) MassHealth administrative data (baseline 2015-2017, pre-2018-2022, post-2023-2027);	MassHealth members receiving primary care and BH from community-based clinical settings with providers awarded by the WI programs (n ≤ 30); Providers of community-based clinical settings	Access to healthcare providers; Timely access to services (e.g., average wait time for an appointment); Adequacy of geographic access; Increased access to culturally competent service; Adequate length of office visits; Continuity of care; Perceived health status; Members' overall satisfaction with PC, BH, or FNP services; Providers' average number of members per year	Descriptive analyses (member and provider); Thematic analysis (member and provider)

Research Questions[a]	Hypotheses	Data Sources (Evaluation Period)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
RQ5-4 Did the WI programs improve provider experiences?	H5-4.1 The WI programs eased the recruitment of providers and improved provider experience and retention in community-based clinical settings.	Program documents (ongoing); WI program administrator interview (2024-2025; 2026-2027) Provider interview (2024-2025; 2026-2027) Provider exit interviews by practice (if feasible) (ongoing)	Community-based clinical setting administrators (n ≤ 30); Individual PC providers, BH providers, and FNPs (n ≤ 30 combined across the three provider types)	Ease of recruiting providers (e.g., time to fill vacancies, quality of applicant pool); Number (and percent) of providers in the WI programs who completed the 4-year service obligation (and by provider type and by program); The average number of years providers serve in community-based clinical settings (by provider type and by program); Qualitative information about provider burnout	Descriptive analyses (administrator/ provider); Thematic analysis (administrator/ provider)
RQ5-5 Did the WI programs affect MassHealth member healthcare utilization?	H5-5.1 The WI programs increased preventive care and community-based outpatient services (including BH services) for MassHealth members served in settings where providers were enrolled in WI programs compared to settings where providers were not enrolled in WI programs. H5-5.2 The WI programs reduced MassHealth members' ED visits and hospitalizations for primary care-sensitive services in settings	Medicaid administrative data (baseline 2015-2017, pre-2018-2022, post-2023-2027)	MassHealth members receiving PC, BH, or FNP services from community-based clinical settings in and outside the WI programs (population estimated as N=~400,000)	**H5-5.1** Use of community-based BH care; Adult access to preventive/ambulatory health services **H5-5.2** For MassHealth members receiving PC, BH care, or FNP care: • Rate of inpatient admissions for PC-sensitive services • Rate of all-cause inpatient admission • Rate of ED visits	Quasi-experimental design (QED) (member); Propensity score methods (member); Interrupted time series (ITS) (member); Subgroup analyses (member)

Research Questions[a]	Hypotheses	Data Sources (Evaluation Period)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
	where providers were enrolled in WI programs compared to settings where providers were not enrolled in WI programs.			• Rate of inpatient psych services use	
RQ5-6 Did the WI programs impact the financial sustainability of Medicaid?	H5-6.1 The cost of the WI programs and increased outpatient care costs were offset by decreased inpatient and ED costs for members attributed to community-based settings with providers participating in WI programs. H5-6.2 WI programs reduced the per member per month (PMPM healthcare cost of MassHealth members receiving care at community-based clinical services benefiting from WI programs.	Medicaid administrative data (baseline 2015-2017, pre-2018-2022, post-2023-2027); Program documents (e.g., Program financial report) (ongoing)	MassHealth members receiving PC, BH, or FNP services from community-based clinical settings with providers in the WI programs (population estimated as N=~400,000)	**H5-6.1** Total WI programs cost; Cost of outpatient services; Cost of inpatient and ED services; **H5-6.2** Average PMPM cost for MassHealth members receiving PC, BH care, or FNP care in clinical settings.	Quasi-experimental design (QED) (member); Propensity score methods (member); Interrupted time series (member)

a. Research questions developed in response to STCs sections 13.1-13.8; 1115 MassHealth Demonstration ("Waiver") | Mass.gov
b. Data Sources are described in section 6.4.2, “Data Sources and CollectionMethods,” and section 1.4.1, “Summary of Data Sources.”
c. Analysis methods are described in section 6.4.4, “Analysis Methods.”

6.4. Data and Methods

6.4.1. Study Populations (Including Potential Comparison Groups)

Study population:

The study population for the WI program will include individual providers, practice sites, or individual MassHealth members, depending on the RQ:

1. Providers who were eligible to apply for the three WI programs;
2. Prospective providers potentially eligible for the WI program (e.g., graduating medical students);
3. Community-based practice sites with providers in the WI programs, providing primary care and BH services to MassHealth members; and
4. MassHealth members who received primary care and BH services from community-based practice sites.

Comparison Group:

We encourage MassHealth to randomly select providers among applicants in the WI programs under the 2022-2027 Demonstration; this would allow us to include a random sample of providers and MassHealth members as a comparison group in the evaluation. If that is not possible, the evaluation team will use propensity scores to generate similar comparison groups (described further in Section 6.4.2) of:

1. Eligible providers (practice sites and individual providers) who applied for but were not accepted by these programs or were enrolled but left the program before completion. If such comparison groups are unavailable for a given WI, we will identify comparison group members from other community-based practices and providers eligible for participation in the program.
2. MassHealth members who received primary care and BH services from community-based practice settings.

The IE will use mixed methods to: (1) understand how the WI programs were implemented through qualitative interviews, (2) capture facilitators and barriers to the successful implementation of these programs through qualitative interviews, (3) identify factors that influenced, or would influence, the targeted providers' decision to serve MassHealth members, as stated by the goal of the programs through collection and analyses of survey data, program reports, and qualitative interviews, and (4) determine how the WI programs improved MassHealth members' outcomes and affected MassHealth costs through Medicaid administrative data analyses. The measures, data sources, and analytic approaches that will be used to address each evaluation hypothesis are presented in Table 6-2.

6.4.2. Data Sources and Collection Methods

The key data sources for the WI evaluations are provider (and prospective provider) surveys, provider and stakeholder interviews, member interviews, Medicaid administrative data (enrollment, eligibility, claims, encounters), and program reports (as indicated in Table 6-2).

Qualitative Data

The qualitative data will include the following:

Programs Documents

The documents include Request for Proposals (RFPs), program monitoring, and enrollment reports. Literature will also be reviewed to gather evidence of the effectiveness of similar programs. These data will inform the development of interview guides for program administrators, providers, and members. The collection and review of these documents will be throughout the evaluation period.

WI Program Administrator and Vendor Interviews

These interviews will be conducted with MassHealth staff and MassHealth vendors and will explore the process used in identifying and recruiting providers and the challenges faced, if any, during the program's implementation. The interviews will be conducted in State Fiscal Year (SFY) 24, SFY25, and SFY27. We anticipate using an open-ended questionnaire distributed to MassHealth staff and MassHealth vendors for efficiency when each modality is expected to yield similar information based on the type of respondent and the information being collected.

Provider Interviews

These interviews will include a convenient but diversified sample of practice sites and individual clinicians who applied for the program. Both awardees and non-awardees' perspectives will be explored. The goals are to explore how they learned about the programs, their motivation, and their plans for and experiences complying with the programs' requirements. The interviews will be conducted in SFY24, SFY25, and SFY27.

Providers' Exit Interviews (If Feasible)

These interviews will include a sample of providers who left their work at CHCs for other opportunities. The interviews will inform MassHealth -about reasons for leaving the job, the overall workplace culture, and any processes and systems that contributed to the decision to leave. These interview data will be subject to whether practices can share the exit interview data with the IE. Even if so, this is supplemental data to provider interviews and surveys.

Member Interviews/Focus Groups

These interviews will be with Medicaid members who receive services from CHCs or any other community-based outpatient settings who receive funding or have clinicians who receive funding from the three WI programs. Members' observed changes in

access and experience with receiving primary and BH care will be explored. Up to 50 primary and BH care members will be contacted; the final number of interviews is subject to data saturation. Two waves of interviews will be conducted in SFY25 and SFY27, respectively.[119] A diversified convenience sample of members in terms of age, gender, race, and region will be selected. Focus groups will be arranged if members' schedules match. The interviewing schedule will be coordinated with other policy domains' data collection efforts. To identify and recruit members, we would consider placing flyers in the providers' offices and have them alert members to contact the evaluator to schedule an interview, with a stipend provided to interviewees; or use program encounter data (e.g., mobile crisis intervention encounter of CBHCs; or on-site recruitment of members on a randomly selected day). The selection of interviewees and conduct of interviews will be coordinated with other policy domains, primarily the Delivery System Reform (DSR) policy domain.

Quantitative Data

The quantitative data will include the following:

Medicaid Administrative Data

This data will be used for determining member healthcare utilization and cost, as summarized in Section 1.4.1 Summary of Data Sources. MassHealth members will be attributed to providers of these WI programs in the analyses.

Cross-Sectional Surveys of the Targeted Clinician (or Prospective Clinician) Types (e.g., Residents, Students)

Using a conjoint design,[120] the provider (workforce) survey will construct scenarios of incentives, including financial incentives, that MassHealth might consider increasing providers' motivation to serve MassHealth members in different settings, including community-based clinical settings with a high percentage of Medicaid members. This conjoint survey was chosen because there is no direct rate increase program for the targeted provider population that MassHealth is running, which limits the evaluator's capability to use observational data to assess the relative impact of loan repayment/residency grant programs vs. direct rate increases. Survey respondents' preferences will be solicited using conjoint methods where providers evaluate the complete program, not one part, to allow respondents to incorporate the same trade-off processes they use in the actual decision-making process by reacting to a set of incentive scenarios identified by different levels of attributes. The IE will reference the literature and collaborate with MassHealth and key stakeholders to define each attribute and attribute's levels, such as a range of student loan repayment amounts or percentage increases in direct payment rates. The survey will capture the provider's likelihood of choosing each scenario to meet the WI programs' goal (e.g., residents'

[119] These time points may be adjusted to account for the actual implementation schedule of these award programs.

[120] Mangham, L.J.; Hanson, K.; & McPake, B. (2008). How to do (or not to do) Designing a discrete choice experiment for application in a low-income country. *Health Policy and Planning, 4*(2), 151-158

multi-year services in community-based settings). Additional incentive scenarios (e.g., non-financial attributes) may be explored through open-ended response questions.

Students (who are close to graduation), primary care clinicians (including residents), and BH clinicians (new cohorts) will be asked to participate in an online survey. The survey population will include all providers eligible or who would soon be eligible for the WI programs (e.g., those who applied and were awarded, those who applied but were not awarded, and those who were eligible but did not apply). It will also include providers outside of community-based settings who would be eligible for the WI program if they took a job in a community setting, provided that their contact information is available. MassHealth's WI program managing partner will supply provider contact information. The survey will also include a sample of prospective candidates (those who currently work outside of eligible community-based settings but might be willing to switch to a job in a community setting).

The first wave of the survey will be implemented about a year after each program is implemented (currently estimated to be SFY25), and the second in SFY27. The timeline will be adjusted according to the actual program start date, as needed.

The second wave will include a new cohort of students and clinicians. For those willing to participate in a follow-up in the second wave, the IE will conduct a follow-up survey with them. For the follow-up survey, among a subset of providers benefiting from the WI programs, the IE will include additional questions about their direct experiences with the program and whether their choices would have changed.

6.4.3. Measures

As described in the logic model and Table 6-2, both quantitative and qualitative evaluation measures will be used for different RQs; they cover four categories: organization-level measures (e.g., number of awards, provider demographics), member-reported measures (e.g., access, provider choices), member healthcare utilization (e.g., use of preventive care, acute and emergency service utilization), and cost (e.g., program cost, healthcare cost). Details on the specifications, numerator, and denominator for key measures are given in Appendix B.

6.4.4. Analysis Methods

For qualitative data (interviews/focus groups) and documents, thematic analyses will be conducted. Please refer to Chapter 3 (Delivery System Reform), Section 3.4.5 Analysis Methods for the data analysis approach which would apply here.

For the conjoint cross-sectional survey, the attribute levels will be coded as dummies, and regression models will be performed to estimate the utilities (i.e., level of satisfaction) for each attribute level, i.e., the numerical expression of the value that a respondent would place on each level of each attribute.[121] The unit of analysis is the

[121] Hu, W., Sun, S., Penn, J., & Qing, P. (2022). Dummy and effects coding variables in discrete choice analysis. *American Journal of Agricultural Economics, 104*(5), 1770-1788. https://doi.org/10.1111/ajae.12311

probability of remaining or becoming a MassHealth provider. The analysis will yield utility scores on an interval scale. The utilities associated with each attribute level will be used to compute the relative importance of each attribute. The attributes and their levels will be used to develop a market simulation of potential incentive scenarios the state might consider to encourage more providers to participate in the MassHealth program. A hypothetical example of these scenarios is an option where MassHealth would offer a $2,000 student loan forgiveness program, a 2 percent increase in reimbursement rate, and ask the providers to have a panel of 10 percent MassHealth and/or uninsured members. Using the choice simulation function, the utilities associated with each scenario will be converted into a choice probability to predict which scenario would best meet the objectives of the WI programs. The results will be presented as an aggregate for all respondents and a segmented analysis by respondent eligibility for WI status. A sensitivity analysis will be conducted to convert the predicted utilities into choice probability to allow an estimate of the proportion of providers willing to participate in the program under each market scenario.[122] Individual and segmented analyses will be conducted to show variation in choice probability by gender and provider's years of experience.[123,124] Inverse probability weights will be used to account for non-response bias and examine the various assumptions of missingness. The non-response weights will be computed using covariates included in the sample framework, such as age, gender, and population type.

The IE will use interrupted time series (ITS) with a comparison group for member healthcare utilization analyses using Medicaid administrative data. Please refer to Section 3.4.5 Analysis Methods for the data analysis approach, which would apply here.[125,126] Specifically, the IE plans to compare the outcomes of Medicaid members who receive services from community-based clinical practices (e.g., CHCs, CBHCs) in the WI programs (or intervention group members) with members who receive services from community-based clinical practices that were not part of the WI program over multiple timepoints before and during the Demonstration. A comparative set of providers who have not used the WI programs will be chosen, and the members of these providers will be selected and propensity balanced to reflect the characteristics of those participating in WI programs. The analyses will control the characteristics of providers (e.g., size, region, and proportion of clinicians receiving financial incentives from the WI programs) and members (e.g., demographic and clinical characteristics). The IE will explore the use of imputation methods or sensitivity analysis related to race/ethnicity data and include demographic characteristics in our analysis, as appropriate.

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[122] Baier, D., Gaul, W. (2001). Market Simulation Using a Probabilistic Ideal Vector Model for Conjoint Data. In: Gustafsson, A., Herrmann, A., Huber, F. (eds) Conjoint Measurement. Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-662-06392-7_4.

[123] Rao, V. R., & Rao, V. R. (2014). Beyond Conjoint Analysis: Advances in Preference Measurement. *Applied Conjoint Analysis,* 1-36; Orme, B.K. (2010) Getting Started with Conjoint Analysis: Strategies for product design and pricing research. Madison, WI: *Research Publishers LLC.*

[124] Pearmain, D., et al. (1991). Stated preference techniques: a guide to practice. *Steer Davis Gleave and Hague Consulting Group, Hague.*

[125] Penfold RB, Zhang F. (2013). Use of interrupted time series analysis in evaluating health care quality improvements. *Academic Pediatrics, 13*(6 Suppl):S38-44.

[126] Cook, T. D., Campbell, D. T., & Shadish, W. (2002). Experimental and quasi-experimental designs for generalized causal inference. *Boston, MA: Houghton Mifflin*. (pp. 103-134).

The analysis timeframe for the quantitative data will be from 2018 to one year after the end date of the Demonstration. The choice of the timeframe beginning in 2018 is to capture outcomes before the Public Health Emergency (PHE). The analysis periods will include the following phases of policies: (1) SWI only (2018-2020), (2) SWI+ PHE (2020-2022), (3) PHE only (2022-2023),[127] and (4) WI programs (2023-2027).

Using an embedded mixed methods approach, we will synthesize the quantitative and qualitative data. We will solicit an in-depth nuanced understanding of providers' experiences, examine how those experiences may be related to policy and practice innovation, and use these findings to explain pertinent trends and outcomes. For example, understanding providers' perspectives on workforce initiatives can help contextualize trends seen in outcomes.[128] Conversely, preliminary quantitative findings from the analysis of data from early in the Demonstration period can generate questions regarding underlying mechanisms that can then be explored in subsequent qualitative data collection and analysis.

6.4.5. Limitations

The evaluation design for the WI domain has a few limitations. First, the WI programs will be implemented when the Commonwealth — and the nation — is facing a severe shortage of healthcare providers. In addition to the three WI programs under the Demonstration, there are other state and federal initiatives related to the workforce and other state policies/programs (e.g., primary care sub-capitation, expansion of community service program, expansion of coverage, etc.) that would impact a member's healthcare access and utilization. All of these programs have the potential to have a confounding effect on the WI initiatives. Using a comparison group will mitigate the problem as much as possible. However, it is possible that our evaluation will not be able to detect significant/measurable changes in utilization and cost due to the relatively large impact of provider shortages relative to smaller effect sizes and benefits distributed over a long-term time horizon expected from the WI programs. Larger investments (e.g., loan amount) may be needed to sufficiently fund a larger percentage of the target provider population. In addition, more pipeline/recruitment programs may be required to incentivize students and workers from other fields to enter the primary care/BH workforce in community settings. For similar reasons, the member interviews may identify no differences of experiences or those hard to be attributable to the WI programs. Therefore, the interpretation of findings from this evaluation will need to be considered in the larger context (e.g., improved access may be a result of multiple policies).

Second, due to a lack of an actual direct rate increase program by MassHealth and the opportunity to experiment with such a program, the conjoint models will be used to fill this gap in data. The conjoint model uses a decomposition model, where a respondent reacts to a set of complete scenarios identified by different levels of attributes. These

[127] Based on the current federal guidelines, the PHE is estimated to end in May 2023,. It is possible that it will extend again and overlap with the WI implementation period.

[128] Creswell, J. W., & Plano Clark, V. L. (2007). Designing and conducting mixed methods research. *Sage Publications*, Thousand Oaks, CA.

preferences are decomposed to determine how much utility is associated with each level of each attribute. However, this approach has several limitations to be addressed:

1. The identified scenarios might not capture all attributes that might affect providers' decision to participate in the program. Therefore, we will involve both MassHealth and key stakeholders in developing these scenarios.
2. Averages can mask important market forces caused by patterns of preferences at the segment or individual level, especially where the utility associated with an attribute level is dominant. To address these limitations, the segmented market simulation will be performed to estimate the impact of different attributes. Moreover, self-reported and perceived preference does not always translate into real choices, which impacts the reliability of the findings. Literature about the impact of the direct rate increase on provider incentives to serve in clinical settings with a high density of Medicaid populations will be reviewed to contextualize our findings. Real choice vs. hypothetical choices could be compared among those benefiting from the WI programs.
3. Because members, especially those in need of BH services (e.g., mobile crisis intervention), can switch to different community-based clinical settings, there is the challenge of attributing members to a specific clinical setting, adding the possibility of misclassifying the source of impact. However, all members must have a MassHealth-attributed PCP, and MassHealth regularly updates primary care practice attributions.
4. It is expected to take at least four years for providers' final commitment to community-based settings to be realized. If some providers join the WI programs towards the end of the Demonstration period, the evaluation timeframe (about two years after the Demonstration is over) cannot fully capture these providers' final choices to stay. Therefore, the IE may miss the final decision data on late adopters of the WI benefits.

7. Hospital Quality and Equity Initiative

7.1. Overview of Hospital Quality and Equity Initiative (HQEI) Policy Domain

In this Demonstration, MassHealth proposes an innovative HQEI to incentivize hospitals to improve healthcare quality and equity. CMS has authorized the expenditure of up to $400 million annually for private acute care hospitals to improve healthcare quality and equity within the Commonwealth and up to $90 million annually for Cambridge Health Alliance (CHA) (the Commonwealth's only non-state-owned public hospital) to improve healthcare quality and equity and to develop interventions for both its Medicaid population and the uninsured individuals it serves. Participating hospitals will demonstrate progress towards improving quality and equity by (1) attaining complete, beneficiary-reported demographic and health-related social needs (HRSN) data; (2) identifying and addressing disparities in access and quality outcomes; and (3) strengthening organizational capacity for health equity including through collaboration with the health system and community partners (CPs). Direct funding is not being provided for implementation or to reimburse provider costs incurred for implementing the HQEI. Participating hospitals will also build organizational and workforce competence to improve quality and health outcomes, reduce disparities, and enhance their ability to provide accessible and culturally appropriate services.[129]

Funding for the HQEI will be at risk for each performance year (PY), with state and hospital accountability. Reductions from statewide accountability will apply to the global amount of funding from which hospital payments may be made for the initiative. The accountability framework is described in the STCs and is further specified in MassHealth's HQEI Implementation Plan (pending CMS approval).

7.1.1. Goals of the Hospital Quality and Equity Initiative (HQEI)

The HQEI component of MassHealth's 2022-2027 Demonstration aims to improve the quality of care and advance health equity, focusing on initiatives addressing HRSNs and health disparities demonstrated by variation in quality performance.[130]

7.1.2. HQEI Policy Sub-Domains and Desired Outcomes

The Commonwealth and participating hospitals will pursue performance improvements in three HQEI sub-domains described further below. Expenditure authority for performance-based payments for private acute care hospitals associated with achievement in each sub-domain is presented in Table 7-1 (i.e., Table 14 of the STCs).[131]

[129] STC 14.1, pages 102-103; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[130] HQEI Performance Year 1 Section 1.A of the Implementation Plan; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[131] STC 14.7, pages 107-108; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

Table 7-1: Expenditure Authority Annual Allocation by Policy Sub-Domains

Row Description	Sub-Domain 1: Demographic and HRSN Data Collection	Sub-Domain 2: Equitable Access and Quality	Sub-Domain 3: Capacity and Collaboration
% of Annual Limit	25 percent	50 percent	25 percent
Annual Amount ($)	$100M	$200M	$100M

Sub-Domain 1- Demographic and Health-Related Social Needs (HRSN) Data

MassHealth and its participating hospitals will be assessed on the completeness of beneficiary-reported demographic and HRSN data submitted in accordance with CMS-approved HQEI Implementation Plan (pending CMS approval). Demographic and HRSN data will include at least the following categories: race, ethnicity, primary language, disability status, sexual orientation, gender identity, and HRSN, and must be submitted in a consistent format across participating entities. Data completeness will be assessed separately for each data element.[132]

Through annual milestones, MassHealth and participating hospitals will be incentivized to meet an interim goal of 80 percent completeness for self-reported race and ethnicity data by the end of PY3. Participating entities will be incentivized through annual milestones to achieve at least 60 percent data completeness for beneficiary-reported disability data (pending approval by CMS), and at least 80 percent data completeness for beneficiary-reported other demographic data (including at least primary language, sexual orientation, and gender identity) by the end of PY5. Participating entities will also be incentivized to meaningfully improve rates of HRSN screenings, as well as the ability to track and report on them, from the baseline period by the end of PY5.[133]

The collection of these demographic and HRSN data is intended to support MassHealth's goals of identifying and monitoring health disparities, increasing screening for HRSNs, and increasing the percentage of members with an identified HRSN referred to appropriate services.[134]

Sub-Domain 2- Equitable Access and Quality

Participating hospitals will be incentivized for performance on metrics related to access to care (including for individuals with limited English proficiency and/or disability); preventive, perinatal, and pediatric care; care for chronic diseases; behavioral health (BH); care coordination; and/or patient experience. Subject to CMS approval and informed by needs assessments, the Commonwealth will select a subset of measures, including at least three from CMS's Health Equity Measure Slate for hospital performance and at least seven measures for statewide performance. Measures will be

[132] STC 14.2, page 103; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[133] STC 14.3, page 104; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[134] HQEI Performance Year 1 Implementation Plan, Figure 2; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

selected from the following priority areas: maternal health, care coordination, care for acute and/or chronic conditions, and patient experience of and/or access to care.[135]

Performance expectations are specified further in the HQEI Implementation Plan (pending CMS approval) and include, at a minimum:

1. Reporting on access and quality measure performance, including stratifications by demographic factors (such as race, ethnicity, language, disability, sexual orientation, and gender identity), HRSNs, and/or defined by other individual- or community-level markers or indices of social risk;
2. Developing and implementing interventions aimed at improving quality and reducing observed disparities in performance metrics to ensure that all members, regardless of their demographic characteristics, have access to covered services that are delivered in a manner that meets their unique needs; and
3. Improving quality and/or closing disparities as measured through performance on a subset of performance metrics.

For up to the first three years of the Demonstration, performance will be assessed based on reporting on access and quality measure performance and developing and implementing interventions to improve quality and reduce disparities. For at least the last two years of the Demonstration, performance will be assessed based on improving quality and closing "observed disparities on metrics that account for clinical and social risk factors found through analysis to be associated with lower performance on such metrics and/or other appropriate individual- or community-level markers or indices of social vulnerability."[136]

MassHealth's goals for this policy sub-domain include identifying and monitoring statewide disparities in clinical quality measures, closing gaps in targeted quality measures by PY5, identifying best practices for targeted equity improvement interventions, increasing hospital and accountable care organization (ACO) collaboration on disparities-reduction projects, improving member receipt of linguistically appropriate care, high levels of provider and staff demonstrating disability competency, and closing gaps in the percentage of members reporting their accommodation needs were met.[137]

Sub-Domain 3- Capacity and Collaboration

MassHealth and participating hospitals will be incentivized to improve provider and workforce capacity and collaboration between health system partners to improve quality and reduce healthcare disparities.[138] Participating entities may be assessed on improvements in metrics such as provider cultural competence, achievement of externally validated equity standards, and joint accountability for ACO performance.

[135] STC 14.4, page 105; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[136] STC 14.4, pages 105-106; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[137] HQEI Performance Year 1 Implementation Plan, Figure 3; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[138] STC 14.2, page 104; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

Some assessments, detailed below, will rely on surveys and standards developed by The Joint Commission (TJC). This independent not-for-profit organization offers accreditation, certification, and standard setting for the healthcare industry. For PY1 of the HQEI, participating hospitals will have their performance assessed for the Capacity and Collaboration sub-domain based on timely submission to MassHealth of member survey results pertaining to cultural competency, an attestation that the hospital has completed TJC surveys for health equity accreditation standards, and the health equity performance scores of ACOs with which the hospital is partnered.[139] Achievement of at least 80 percent of hospitals meeting rigorous standards, as established by a national quality or accreditation organization, regarding service capacity, access, and delivery of culturally and linguistically appropriate care is expected by the end of PY3.[140]

MassHealth goals for this policy sub-domain include increasing organizational capacity, structure, and workforce for meaningful health equity work, improving culturally competent care for MassHealth members, and increasing collaboration between health system partners to improve care quality and reduce disparities.[141]

7.1.3. HQEI Policy Domain Implementation Plan and Timeline

The HQEI spans the five-year Demonstration period. Detailed schedules of activities will be included in MassHealth's HQEI Implementation Plan (pending CMS approval). A summary of expenditure authority by performance, Demonstration, and calendar year (CY) is included in Table 7-2 (adapted from Table 13 of the STCs).[142]

Table 7-2: Annual Expenditure Limits (In Millions, Total Computable)

Row Description	Demonstration Year (DY) 27	DY 28	DY 29	DY 30	DY 31	DY 32
Private Acute Hospitals	$80M	$320M	$400M	$400M	$400M	$400M
CHA	$22.5M	$90M	$90M	$90M	$90M	$90M
Performance Years (PY)	PY 1	PY1	PY2	PY3	PY4	PY5
Calendar Years (CY)	10/1/2022 – 12/31/2023	(Through 2023)	2024	2025	2026	2027

[139] HQEI Performance Year 1 Implementation Plan, Table 4; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[140] STC 14.5, page 107; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

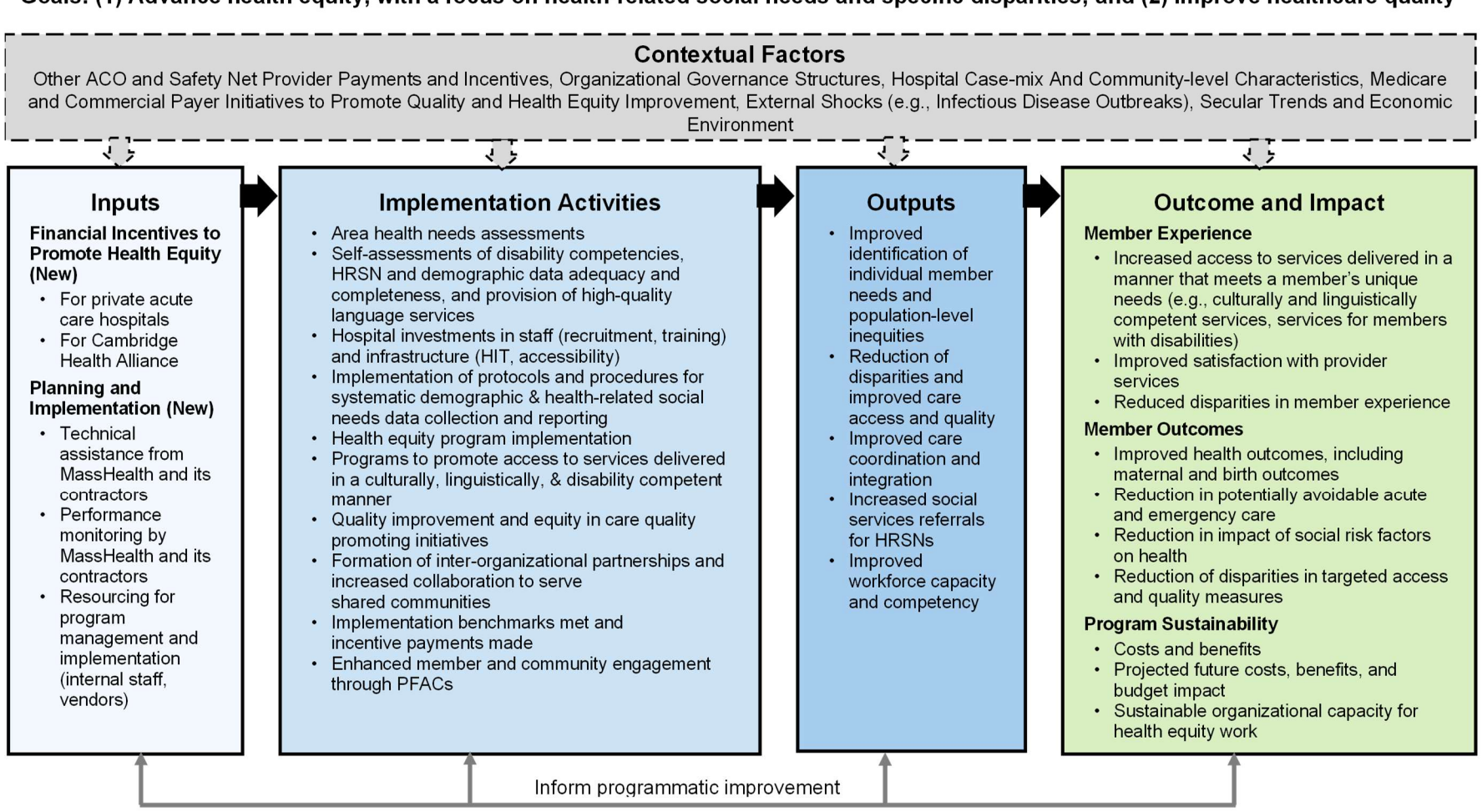
[141] HQEI Performance Year 1 Implementation Plan, Figure 4; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[142] STC 14.1, page 102; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

7.2. Logic Model

The HQEI logic model in Figure 7-1 links the Demonstration Goals to the Demonstration Inputs, Implementation Activities, Outputs, and Outcomes and Impact of the Demonstration. The RQs and hypotheses that follow are guided by this logic. The HQEI component of the demonstration is new, as are all its associated programs and policies.

Figure 7-1: Logic Model for the HQEI Component of the Demonstration



7.3. Research Questions and Hypotheses

Table 7-3 provides an overview of the RQs, hypotheses, data sources, study populations, measures, and analytic methods used to evaluate the HQEI. The elements are described in detail below in Section 7.4 Data and Methods.

Table 7-3: Research Questions and Hypotheses for HQEI

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size-per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
RQ6-1 What actions were taken by the state to support HQEI?	H6-1.1 MassHealth will distribute funding based on reporting and performance for participating hospitals to support HQEI. H6-1.2 MassHealth will develop policies and procedures and provide operational oversight to support implementation. H6-1.3 MassHealth and its contractors will deliver technical assistance (TA) to support HQEI. H6-1.4 MassHealth and its contractors will provide performance monitoring to support HQEI.	Key Informant Interviews (KIIs), focus groups, and/or open-ended surveys (2024-2025; 2026-2027) • MassHealth leadership and staff • Hospital leadership and staff Data and documentation prepared by MassHealth and its contractors (ongoing basis)	MassHealth leadership and staff (Interviewees: n ≤ 5) Hospital leadership and staff (Interviewees: n ≤ 50-70)	Funding distributed; Policies and procedures developed; Types of technical assistance and performance monitoring provided; Perceived effectiveness of procedures and policies to support implementation; Perceived effectiveness of TA; Hospital utilization of TA services; Perceived effectiveness of performance monitoring	Qualitative analysis of data collected through KIIs (MH, hospital); Qualitative analysis of documents; Descriptive analysis
RQ6-2 What actions did participating hospitals take to implement quality	H6-2.1 Participating hospitals will perform competency and needs assessments to target quality and equity initiatives.	KIIs and/or focus groups (2024-2025; 2026-2027) • Hospital leadership and staff • Staff from partnering organizations	Hospital leadership and staff (Interviewees: n ≤ 50-70), staff from partnering organizations (n≤50)	Implementation and reporting of competency and needs assessments; Perceived ability and strategies to recruit, train, and retain providers and staff to implement quality and equity initiatives;	Qualitative analysis of data collected through KIIs (hospital, partner organization);

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size-per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
and equity initiatives?	H6-2.2 Participating hospitals will recruit, train, and retain providers and staff responsible for implementing quality and equity initiatives. H6-2.3 Participating hospitals will modify health information systems to ingest and use self-reported demographic and HRSN screening data. H6-2.4 Participating hospitals will train staff to systematically collect self-reported demographic and HRSN data in a culturally competent manner. H6-2.5 Participating hospitals will establish processes to submit self-reported demographic and HRSN data to the state. H6-2.6. Participating hospitals will implement programs to promote access to services delivered in a culturally, linguistically, and disability-competent manner. H6-2.7 Participating hospitals will implement	Data submitted to MassHealth (2022-2027): • Race, ethnicity, language, disability, social orientation, and gender identity (RELDSOGI) files provided by MassHealth; • Stratified quality data (i.e., performance data including member-level race and ethnicity for clinical measures); • Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey of members results regarding culturally competent care (2023-2027); • Meaningful Access to Health Care Services for Persons with Limited English Proficiency performance data Documentation submitted to MassHealth (2022-2027): • Attestation of completing TJC surveys for health equity accreditation standards and/or documentation showing accreditation; • Attestation of hospital-ACO partnership • Hospital-submitted quarterly Performance Improvement Plan-related documents (e.g., key		Use of health information systems to ingest and use self-reported demographic and HRSN data; Implementation of training for staff to systematically collect self-reported demographic and HRSN data in a culturally competent manner; Established processes to collect and submit self-reported demographic and HRSN data to the state; Number and types of programs implemented; Facilitators and barriers to program implementation; Provider and staff perceptions of HQEI programming; Number and types of new, reciprocal relationships between hospitals and partner organizations formed for the HQEI; Development of organizational policies supporting cooperation between hospitals and partner organizations; Provider and staff perceptions of relationships with partner organizations; Engagement with MassHealth members during the design and implementation of quality and equity initiatives; Timely submission of required documentation; Common themes;	Qualitative analysis of documents; Descriptive analysis (member, hospital)

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size-per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
	quality improvement initiatives to promote better and more equitable care quality. H6-2.8 Participating hospitals will improve and strengthen relationships with partner organizations. H6-2.9 Participating hospitals will engage MassHealth members and the community in the design and implementation of quality and equity initiatives.	personnel/institutional resources document, mid-year planning report) • Hospitals' completion of competency and needs assessments to target quality and equity initiatives; • Hospital Health Equity Strategic Plan; • Hospital Plan for Screening for Social Drivers of Health; • Hospital-selected HRSN screening tool; • RELDSOGI assessment; • Hospital-submitted interpreter attestation; • Hospital-submitted disability competency self-assessment and plan for improving competency in targeted competency areas; • Accommodation needs report and plan for improvement; • HRSN assessment		Indication of progress toward policy goals	
RQ6-3 Did participating hospitals improve the completeness of member self-reported demographic and HRSN data?	H6-3.1 Participating hospitals will increase the percentage of members screened for HRSN. H6-3.2 Participating hospitals will increase the percentage of members with complete data for	Center for Health Information Analysis (CHIA) Enhanced Demographics Data File sent to MassHealth (2023-2027); MassHealth administrative data (2018-2027); Data submitted to MassHealth (2023-2027)	Participating hospitals (n=61) and members receiving services from participating hospitals (encounter data: members receiving services at CHA n=~6,000;	H6-3.1: % of members screened for HRSN; H6-3.2: % of members with complete data for enhanced demographic data elements; H6-3.3: % of members with unmet needs who are linked with services and supports;	Descriptive analysis (member, hospital)

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size-per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
	enhanced demographic data elements. H6-3.3 Participating hospitals will increase the percentage of members with unmet needs who are linked with services and supports. H6-3.4 Participating hospitals will report performance data stratified by demographics and HRSN.		members receiving services at acute private hospitals n=~470,000)	H6-3.3: % of members (overall and among those with HRSNs) enrolled in social services and programs to address HRSNs (e.g., SNAP if data are available from MassHealth, Flexible Services, specialized CSP programs); H6-3.4: % of hospitals reporting stratified performance data by demographics and HRSN	
RQ6-4 Did participating hospitals reduce disparities and improve care access and quality?	H6-4.1 Healthcare quality will improve. H6-4.2 Disparities in healthcare quality will decrease. H6-4.3 Members will report increased access to services delivered in a manner that meets their needs.	CHIA Enhanced Demographics Data File sent to MassHealth (2022-2027); MassHealth administrative data (2018-2027); Member Experience Surveys (HCAHPS) (2023-2027); KIIs and/or focus groups (2024-2025; 2026-2027) with MassHealth members	Members receiving services from participating hospitals (Interviewees: n ≤ 30; Encounter data: members receiving services at CHA n=~6,000; members receiving services at private hospitals n=~470,000)	Perceived access to services delivered in a manner that meets their needs; HCAHPS items related to access and cultural competency; Quality measures from the CMS Health Equity slate, including: • Childhood Immunization Status (CIS-CH); • Timeliness of Prenatal Care (PPC-CH); • Follow-Up After Emergency Department (ED) Visit for Alcohol and Other Drug Abuse or Dependence (FUA-AD and FUA-CH); • Follow-up after Hospitalization for Mental Illness (FUH-AD)	Descriptive analysis (member, hospital); Observed vs. expected (member); Quasi-experimental methods (member)

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size-per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
RQ6-5 Did participating hospitals improve member experience and outcomes?	H6-5.1 Member experience will improve. H6-5.2 Disparities in member experience will decrease. H6-5.3 Member health outcomes (e.g., maternal and birth outcomes) will improve. H6-5.4 Members will experience a reduction in the impact of social risk factors on their health. H6-5.5 Disparities in member outcomes will decrease.	CHIA Enhanced Demographics Data File (2023-2027); MassHealth administrative data (2018-2027); Member Experience Surveys (HCAHPS) (2023-2027); KIIs and/or focus groups (2024-2025; 2026-2027) MassHealth members	Members receiving services from participating hospitals (Interviewees: n ≤ 30; Encounter data: members receiving services at CHA n=~6,000; members receiving services at private hospitals n=~470,000)	HCAHPS measures; Perception of quality and equity initiatives; Experience of care; Access to care; Service delivery met needs; Perceived impact of social risk factors on health; Comprehensive Diabetes Care: Hemoglobin A1c (HbA1c) Poor Control (>9.0%) (HPC-AD); Controlling High Blood Pressure (CBP-AD); Unnecessary C-Section (TJC PC02); Emergency Department (ED) Visits for Individuals with Mental Illness, Addiction, or Co-occurring Conditions; ED Visits (adult, pediatric); 30-day readmission; Maternal morbidity	Qualitative analysis of data collected through KIIs (member); Descriptive analysis (member); Observed vs. expected (member); Quasi-experimental methods (member);
RQ6-6 How did costs and benefits of HQEI affect plans for sustainability?	H6-6.1 The costs and benefits of hospital quality and equity initiatives will vary by hospital and program type. H6-6.2 Participating hospitals and the state will identify health equity initiatives where projected	KIIs, focus groups, and/or open-ended surveys (2024-2025; 2026-2027) • Hospital leadership and staff, staff from partnering organizations • MassHealth staff CHIA Enhanced Demographics Data File (2023-2027);	MassHealth leadership and staff (Interviewees: n ≤ 5); Hospital leadership and staff (Interviewees: n ≤ 50-70); Members receiving services from	HQEI costs overall and by hospital and program type; Stratified analyses of quality, experience, and outcomes by hospital and program type; Perceptions of costs and benefits; Barriers/facilitators to continuing HQEI programs;	Qualitative analysis of data collected through key informant interviews (MH, hospitals, members); Descriptive analysis (MH,

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size-per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
	benefits from continuing the program merit projected costs. H6-6.3 Participating hospitals will make investments in staff recruitment, training, and retention to sustain the organizational capacity needed to continue health equity work.	MassHealth encounter and MassHealth Medicaid Management Information System (MMIS) claims data (2018-2027); Data submitted to MassHealth (2023-2027); Documentation submitted to MassHealth (2023-2027)	participating hospitals (Interviewees: n ≤ 30; Encounter data: members receiving services at CHA n=~6,000; members receiving services at private hospitals n=~470,000)	Plans to recruit/train/retain staff and providers to continue HQEI work; Identification of successful initiatives Barriers/facilitators to continuing HQEI; Perceptions of costs and benefits of HQEI programs	hospitals, members; Expected vs. observed (member)

a. Research Questions developed based on the following STC sections 14.1, 14.3, 14.4, 14.5, 14.6, 14.7, 14.9, 14.10, 14.16, and 14.17; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

b. Data sources are described in section 7.4.2 “Data Sources and Collection Methods” and in section 1.4.1 “Summary of Data Sources”

c. Analytic methods are described below in section 7.4.5 “Analysis Methods”

7.4. Data and Methods

7.4.1. Study Populations

MassHealth Staff and Contractors

The IE team will rely on MassHealth staff and contractors at both the programmatic and leadership levels to inform the evaluation of this initiative. We will collect data from individuals involved in the planning, implementation, and support of the HQEI via key informant interviews (KIIs).

Participating Hospital Staff

The IE team will study participating hospitals' providers, leadership, and staff. The target providers will be any individuals delivering healthcare services to members and those who are involved in designing or implementing HQEI programming. Leaders include executives and program leadership engaged in the design and implementation of the HQEI at their particular institution. Staff includes individuals responsible for the ingestion, transformation, and transmission of HRSN and demographic data from hospital systems to MassHealth and those who support the initiatives in an administrative role. The IE team will collect information from hospital personnel via key informant interviews. Interviewees may also include staff from partnering organizations (e.g., community-based organizations) when such organizations are working with hospitals to implement HQEI programming.

MassHealth Members

The HQEI has the potential to benefit Massachusetts residents in the communities served by participating hospitals, regardless of whether or not they have been hospitalized or their insurance status. The plausibility of measurable spillover effects of the HQEI for populations receiving hospital services, other than the specified targets of MassHealth members (applicable to all participating hospitals, including CHA) and served uninsured residents of the Commonwealth (applicable to CHA), will be considered as additional information on MassHealth and participating hospital implementation and strategic plans become available. However, our primary population of interest will be the MassHealth members and uninsured residents of the Commonwealth who are the direct targets of the HQEI programming — i.e., those who receive inpatient or emergency department (ED) services from a participating hospital. While we will study all individuals in this primary study population where appropriate (e.g., for measures of data reporting), we anticipate defining multiple study subpopulations corresponding to the target populations of HQEI programs (e.g., members whose primary language is not English), the denominators of quality and access measures (e.g., those with diabetes), and based on other characteristics of members (e.g., HRSN), their communities (e.g., area-level socioeconomic stress), or of participating hospitals (e.g., ACO affiliation). Attribution to a study population will be time-varying and determined consistent with measure technical specifications (e.g., an individual may be hospitalized and in the study population in 2023 but not in 2024). Furthermore, although participating hospitals are not expected to be targeting HQEI programming differentially based on the category of MassHealth enrollment, differences

in data availability and quality between MassHealth managed care eligible members (for whom MassHealth is the primary payer) and other MassHealth members will likely necessitate stratified analyses and reporting by enrollment category for specific measures.

Comparison Groups

We will use several comparison groups, following the general principle of selecting comparator populations that most closely resemble the populations exposed to specific Demonstration policies and programs. Due to systematic differences between Medicaid members and commercial enrollees and between interstate policy environments, we plan to primarily draw comparison groups from within the MassHealth program while also exploring opportunities to obtain and leverage data from other Medicaid programs. Accessing individual-level member data from other states is challenging due to privacy and security rules, capacity constraints, and requirements that sharing such data produces information that is deemed of value to the other state sharing data. We expect to use publicly available data from the Hospital Cost and Utilization Project (HCUP) to make comparisons to other state Medicaid program members for measures that can be calculated and compared using individual-level data from HCUP data (namely the hospital readmissions measure) and for measures that can only be compared using aggregated data because individual level denominator data is not available (e.g., ED visits, maternal mortality, C-sections). We will explore the feasibility of creating synthetic controls from other states with the most similar policy environments for these measures that will be calculated using aggregated data. However, the appropriateness of this approach is uncertain because Massachusetts has a unique policy environment and a healthcare system that falls in the tails of the distribution for coverage, delivery system reform efforts, cost, and quality, which raises concerns that a pool of other states cannot satisfy assumptions of the method needed to represent a true counterfactual and may introduce interpolation bias.[143]

If available, we will draw comparison groups from private acute care hospitals in Massachusetts that are not participating in the HQEI or that are delayed in implementation. We will seek to leverage situations conducive to quasi-experimental methods that support stronger levels of inference, such as phased implementation, when possible. However, to our knowledge, implementation has not been delayed for any existing hospital, and participation in the HQEI is ubiquitous. When data are available, we will use historical comparison groups, but we recognize that HRSN and sociodemographic data elements will often not be available or will be incomplete for periods before the HQEI implementation. Since the HQEI grants hospitals autonomy to design their own programs tailored to the needs and priorities of their patient populations, local communities, and organizations, we anticipate that variation in the types of programs and targeted populations implemented will facilitate the use of contemporary comparison groups of members who closely resemble those exposed to specific HQEI programs but who were not exposed because they visited a hospital with

[143] Abadie, Diamond, and Hainmueller: Synthetic Control Methods for Comparative Case Studies. Journal of the American Statistical Association June 2010, Vol. 105, No. 490 McClelland R, Gault S. The Synthetic Control Method a Tool to Understand State Policy. *Urban Institute*. March, 2017.

a sufficiently distinct set of HQEI programs. Such comparisons will be conservative, as all hospitals will implement some overlapping HQEI elements (e.g., data collection and reporting, strategic planning). Another potential secondary comparison group may include individuals who were not hospitalized but who had a similar probability of being hospitalized to members who were hospitalized.

7.4.2. Data Sources and Collection Methods

The IE team will rely on several types of data sources described in Section 1.4.1 Summary of Data Sources to evaluate the effectiveness and implementation of the HQEI program. The specific utility of each source and its relation to the HQEI RQs and evaluation plan is detailed below.

KIIs

KIIs will be conducted with MassHealth staff and contractors, as well as hospital leadership and staff and MassHealth members. They may be in an individual or group format and will be conducted virtually via Zoom or a similar platform in two waves, as described below. Open-ended surveys will also be used for some participants where the information content is expected to be similar between modalities based on the type of respondent and information being collected. The decision regarding individual versus group interview procedures will be made based on the focus or topic of the interview, the number and types of relevant HQEI programs to be covered in the interview, and to minimize the burden to organizations and members. Consideration will be given to individuals' communication preferences, particularly members receiving Long-Term Services and Supports (LTSS), who may prefer to be interviewed individually or use the video chat function rather than communicate verbally. Participants will submit a background survey to provide demographic data and additional information about their roles, responsibilities, and training as applicable and appropriate. KIIs will provide insight into how MassHealth supports HQEIs (RQ6-1), how participating hospitals implement them (RQ6-2), and the implications for member experience (RQ6-4, RQ6-5). They will also allow the IE team to explore MassHealth and hospital leadership perspectives on the costs and benefits of implementing HQEI programs, the facilitators and barriers to continuing them, and to identify sustainable programs (RQ6-6).

In the second year of the evaluation (2024), we will conduct interviews with individuals in staff and leadership positions involved in the HQEI implementation at participating hospitals. We anticipate all 61 acute care hospitals will participate but presently lack information on their governance structures, HQEI staffing plans, and their Health Equity Strategic Plans. However, we are estimating 50-70 interviews (one to two per hospital or group of affiliated hospitals) per wave, which may be adjusted as more information becomes available. The focus of the first wave of interviews will be experiences with and perspectives on developing their strategic plans, conducting needs assessments, engaging MassHealth and community members, and infrastructure development necessary to provide more equitable and culturally appropriate care, including the implementation of HRSN and demographic data collection systems and staff and provider training. The second wave, to be conducted between 2026-2027, will examine how these new programs have enabled participating hospitals to provide accessible,

culturally appropriate care and to reduce disparities. The interviews will address HQEI program implementation progress, barriers and facilitators, perceived costs and benefits of implementing HQEI programs, and perspectives on sustainability.

Thirty interviews will be held with MassHealth members between 2024-2025 and again in 2026-2027. We will purposefully sample a diverse set of participants across hospitals and program types to better understand the breadth of perceptions of care and access. These interviews will complement and help with the interpretation of findings from administrative and clinical data and allow for a more nuanced understanding of how members perceive the initiative, their hospital care, and the impacts it has on their health and social risk factors.

The IE team will also schedule two waves of about five interviews each with MassHealth staff and leadership, which are expected to be completed in 2025 and 2027. These interviews will provide an opportunity for key personnel involved in the design and implementation of the HQEI policies to share their experiences, assess barriers and facilitators, and reflect on the program's sustainability and potential future directions.

Interview protocols for all three key informant categories will be developed with input from MassHealth and representatives from each group. Interview and focus group guides will be informed by the Consolidated Framework for Implementation Research (CFIR) and by the Comprehensive Theory of Integration (CTI) conceptual model.[144,145] The CTI defines integration as “a set of organizational and social features and course of action or activities requiring unification that may exist both within and between organizations,” and it is described further in Chapter 3 (Delivery System Reform). CFIR integrates dissemination and integration theories into five implementation domains (Innovation, Outer Setting, Inner Setting, Individuals, and Implementation Process). Both frameworks are relevant for the HQEI, which will be newly implemented and seeks to promote inter and intra-organizational coordination. We will work with MassHealth and participating hospitals to identify, recruit, and schedule participants for the interviews, with an eye towards diversity and a representation of differing viewpoints in the sample selection.

KII interview transcripts will be analyzed using a qualitative data analysis software program for analyzing qualitative and mixed methods data. The IE team will code the interviews to identify common themes that answer the research questions and provide insight into the various domains of the initiative. Analysts will work together in pairs to establish coding methodology, and once an agreement is reached and is reliability maintained, they will be able to work independently.

[144] Singer, S. J., Kerrissey, M., Friedberg, M., & Phillips, R. (2020). A comprehensive theory of integration. *Medical Care Research and Review, 77*(2), 196-207.doi: 10.1177/1077558718767000. Epub 2018 Apr 2. PMID: 29606036..

[145] Damschroder, L. J., Reardon, C. M., Widerquist, M. A. O., & Lowery, J. (2022). The updated Consolidated Framework for Implementation Research based on user feedback. *Implementation Science, 17*(1), 1-16.

Document Review

The evaluation team expects to review various existing documents throughout the Demonstration to obtain data on participating entities' plans and progress in implementing HQEI programs and the state's progress in implementing supports for the HQEI.

Participating hospitals must submit several documents to MassHealth. A summary of HQEI Performance Expectations for Performance Year 1 is detailed in the PY1 HQEI Implementation Plan (pending CMS approval).[146] Relevant documents for HQEI evaluation include:

- Participation and Collaboration Attestations
- Qualified Interpreters Attestation
- Race, ethnicity, language, disability, sexual orientation, and gender identity (RELDSOGI) Assessment
- HRSN Assessment
- Disability Competency Deliverables
- Health Equity Strategic Plan
- Plan for Screening for Social Drivers of Health and Selection of a screening tool
- Quarterly reports on the ACO-partnered performance improvement plan
- Accommodation needs report and plan for improvement
- Attestation of TJC surveys for health equity accreditation standards

The IE team will evaluate documents on an ongoing basis as they are made known and available from MassHealth. It is anticipated that similar documents will be required in future performance years, and the evaluation team will review them in the manner described below in Section 7.4.5 Analysis Methods.

Administrative and Other Data Files

Administrative data files include eligibility, enrollment, and claims and encounter data, along with clinical or other data submitted by hospitals to support the calculation of quality metrics. CHIA-enhanced demographic data files will indicate if hospitals meet targets in capturing self-reported demographics and screening members for HRSNs (RQ6-3). MassHealth encounter and MassHealth Medicaid Management Information System (MMIS) claims data will support analyses of patterns in quality and access to care (RQ6-4), including the identification of gaps or disparities and their eventual improvement or closure through the implementation of this program (RQ6-2, RQ6-4). When individual-level data are substantially incomplete for certain sociodemographic data elements (e.g., race/ethnicity), imputed data (e.g., from area-level data sources such as the Census) will also be used when such missingness is extensive. Sensitivity

[146] HQEI Performance Year 1 Implementation Plan; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

analyses will be performed to examine the robustness of findings to alternative assumptions regarding missingness mechanisms and analytic approaches to accounting for missingness.

Survey Data

Aggregate results of required Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) surveys of MassHealth members receiving services from participating hospitals will be used to better understand their hospital care experience during HQEI implementation. These surveys cover domains including communication with nurses and doctors, the experience of care, care transition, hospital rating, and recommendations. MassHealth may also add questions to these surveys related to health equity.

7.4.3. Measures

The measures used to evaluate the HQEI policy domain are listed in Table 7-3 according to the research question. Additional measures may be specified — informed by details of MassHealth's HQEI PY1-5 Implementation Plan (pending CMS approval) and hospital strategic plans as they become available.

Qualitative measures will capture information on actions taken by participating hospitals to implement HQEI policies and procedures provided by MassHealth to improve the quality of care and advance health equity. Participating entities are expected to take actions to upgrade or create health information systems to ingest self-reported demographic and HRSN data, to establish culturally competent processes for members to report demographic and HRSN data, for providers and staff to access and use recorded data, to update staff workflows, to recruit and retain staff and providers to implement HQEI initiatives, and to develop and implement staff training and other HQEI programming. Qualitative analyses will also produce information on changes in the approach to delivering services and support and improving health equity from the perspective of members, providers, staff, and organizational leaders. For participating entities, we will examine the facilitators and barriers to designing, implementing, and sustaining HQEI programs and perspectives regarding modifications needed to successfully deliver equitable, person-centered care.

Quantitative measures hypothesized to be affected by the HQEI policy domain initiatives that can be operationalized using data collected from primary sources (e.g., HCAHPS surveys) or made available for the evaluation will be studied. Quality measures will be drawn from the following sources:

- MassHealth HQEI Slate
- CMS Health Equity Slate (once available)
- National quality measure stewards (e.g., AHRQ, NCQA)

Quantitative data will also be examined to better understand changes in data collection rates, disparity reductions, healthcare utilization rates, and costs.

7.4.4. Covariates

For analyses conducted at the individual (member) level using administrative data, we will draw from a consistent set of characteristics including — age, race, ethnicity, language, sex, sexual orientation, gender identity, disability status (either client of the Massachusetts DMH or the DDS, or eligible for Medicaid due to disability), housing problems (either more than three addresses in the year or homelessness by ICD-10 code), the Neighborhood Stress Score, the DxCG medical morbidity summary score, and the RxCG drug-based medical morbidity summary score. A narrower set of characteristics may be used for specific analyses as applicable (e.g., subgroup analyses among women would not use sex as a covariate).

Analyses conducted at the ACO level (or that incorporate clustering at the ACO level) will include covariates such as ACO type (academic hospital-anchored, community hospital anchored, physician-anchored), ACO size (number of MassHealth members, number of total enrollees across all payers), region, and experience with risk-based contracts with Medicare and commercial payers. Analysis conducted at the hospital level will include covariates such as type (academic medical center, teaching hospital, community hospital, and specialty hospital), payer mix, level of acuity (acute, acute critical access, acute sole community, non-acute), trauma center designation (Level 1, 2, 3), profit or non-profit status, hospital size (number of MassHealth members, number of total enrollees across all payers), acuity of patients (case mix), region, and profit margin.

7.4.5. Analysis Methods

Mixed qualitative and quantitative methods will be used to answer the RQs in the HQEI policy domain. Quantitative analyses will examine the impact of HQEI program implementation on changes in quality and outcomes. Qualitative approaches, including semi-structured interviews and/or focus groups with key stakeholders, will support an understanding of stakeholder perspectives related to policy implementation activities, context, and outcomes. Interviews will also provide a contextual understanding of factors that help explain quantitative metrics changes.

Quantitative Analyses

Descriptive

Demographic, clinical, and social characteristics will first be described by data source and calendar year for each study population and subpopulation of interest, including measure-specific populations (e.g., A1c and members with diabetes). Where feasible, process and outcome measures will then be calculated for each population in each CY during the baseline and Demonstration period. Certain survey and clinical quality measures will only have data available for the 2023-2027 periods.

Observed versus Expected

The first comparison will be between observed and multivariable-adjusted estimates of the expected values of each measure for each calendar year of the Demonstration period. Expected values will be estimated from multivariable models developed using

pre-period data and applied to Demonstration period data to predict an individual's value for each measure based on a member's demographic and clinical characteristics (e.g., members with SMI are expected to have a higher probability of ED utilization). These expected values will serve as a historical benchmark against which performance during the Demonstration will be compared. For dichotomous (i.e., yes or no) measures, the probability of success on a given measure will be predicted using logistic models. Rates (e.g., hospitalizations per 100 person-years) will be predicted using Poisson, negative binomial, or zero-inflated models, as appropriate. Continuous outcomes (e.g., expenditures) will be predicted using linear models. For each measure and year of the Demonstration period, the observed value for a measure will be divided by the expected value predicted by the model. When higher values of a measure are desired (e.g., a higher proportion of the population screened), a ratio of observed to predicted greater than one will suggest improved quality. When lower values of a measure are desired (e.g., readmission rates), a ratio of observed to predicted of less than one will suggest improved quality.

Quasi-experimental Methods

To estimate the counterfactual outcomes that would have occurred absent the Demonstration and which can support stronger inferences regarding program effects, analyses must address potential sources of bias, including: 1) population and hospital characteristics that differ between exposed and unexposed groups and 2) unrelated secular trends occurring between the baseline (2018-2022), and the Demonstration (2022-2027) periods. Modern epidemiologic and quasi-experimental design and analysis methods will be applied for this purpose, including propensity score methods to balance population characteristics,[147,148] including overlap weighting, which addresses the limitations of traditional inverse probability weighting.[149] Difference-in-difference comparisons will address secular trends,[150,151] and weighting will address any violations of parallel trends assumptions. Generalized mixed effects linear models will be used for modeling each type of outcome (e.g., dichotomous, continuous, rate) as appropriate and based on observed distributions, with random effects to account for clustering within healthcare organizations, geographic units, and repeated measurements within individuals over time.[152] Bootstrap methods that reflect clustering adjustments will be used to calculate confidence intervals.

[147] Rosenbaum, P. R., & Rubin, D. B. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika, 70*(1), 41-55.

[148] D'Agostino Jr, R. B. (1998). Propensity score methods for bias reduction in the comparison of a treatment to a non-randomized control group. *Statistics in medicine, 17*(19), 2265-2281.

[149] Li, F., Morgan, K. L., & Zaslavsky, A. M. (2018). Balancing covariates via propensity score weighting. *Journal of the American Statistical Association, 113*(521), 390-400.

[150] Vats, S., Ash, A. S., & Ellis, R. P. (2013). Bending the cost curve? Results from a comprehensive primary care payment pilot. *Medical Care, 51*(11).

[151] Lechner, M. (2011). The estimation of causal effects by difference-in-difference methods. *Foundations and Trends in Econometrics, 4*(3), 165-224. Retrieved from: https://EconPapers.repec.org/RePEc:now:fnteco:0800000014.

[152] McWilliams, J. M., Hatfield, L. A., Landon, B. E., Hamed, P., & Chernew, M. E. (2018). Medicare spending after 3 years of the Medicare Shared Savings Program. *New England Journal of Medicine, 379*(12), 1139-1149.

Continuous Enrollee Analysis

The stable population of continuous MassHealth members, who may have disabilities or other criteria for eligibility for MassHealth that are likely to be permanent or semi-permanent, has been identified as a subpopulation of interest. The stability of this population also affords the opportunity to perform a self-controlled comparison, which contrasts member outcomes during the Demonstration period with their own outcomes during the pre-Demonstration period. A strength of this self-controlled design is that by comparing within individuals, it accounts for time-invariant member characteristics (i.e., those that do not change over time). We will again use difference-in-difference analyses to remove secular effects and mixed effects generalized linear models to account for clustering and repeated measurements while adjusting for demographic (e.g., aging) and disease trends. For each year of the Demonstration, we will conduct a continuous enrollee subgroup analysis where members present in the population of interest during the Demonstration year will be evaluated if they were continuously enrolled in the MassHealth managed care eligible population beginning in 2021 or 2022.

Using an embedded mixed methods approach, we will integrate the quantitative and qualitative data. We will solicit an in-depth and nuanced understanding of various stakeholder experiences, examine how those experiences may be related to hospital policy and clinical innovation, and use these findings to explain pertinent trends and outcomes. For example, understanding stakeholder perspectives on program implementation can help contextualize trends seen in targeted access and quality measures.[153] Conversely, preliminary quantitative findings from the analysis of data from early in the Demonstration period can generate questions regarding underlying mechanisms that can then be explored in subsequent qualitative data collection and analysis.

Qualitative Analyses

Our use of document and KII data, qualitatively analyzed and informed by the CFIR and CTI models, reflects our commitment to an embedded design, integrating quantitative and qualitative data reflecting diverse perspectives to explore the implementation process and to contribute to the explanation of outcomes.[154] KII transcripts and document review data will be analyzed using qualitative data analysis methods described in Chapter 3 (Delivery System Reform), Section 3.4.5 Analysis Methods. The following is a summary of these methods:

KIIs

The IE team will code the interviews to identify common themes that address the research questions and provide insight into the various domains of the initiative. Analysts will work together in pairs to establish coding methodology, and once an agreement is reached and is reliability maintained, they will be able to work

[153] Creswell, J. W., & Clark, V. L. P. (2007). Designing and Conducting Mixed Methods Research. Thousand Oaks, CA: *Sage Publications.*

[154] Creswell, J. W., & Clark, V. L. P. (2007). Designing and Conducting Mixed Methods Research. Thousand Oaks, CA: *Sage Publications.*

independently. Interrater reliability will be monitored at regular intervals during the coding processes. The Dedoose platform will be used to calculate kappa coefficients.

Once the coding process is complete, researchers will extract reports of coded text from Dedoose, review the reports for patterns among themes, and summarize findings in memos drafted for review by the entire team. Finally, the team will discuss the summary memos to ensure that themes are accurately conveyed and to add additional information as relevant. Where applicable, the team will compile analytic matrices with coded data to facilitate further analysis.

Document Review

Data systematically extracted from documents and recorded in standardized templates will be stored in secure files for qualitative analyses.

Documents will be analyzed for thoroughness and timely submission. They will be used to evaluate corresponding hypotheses for all research questions to ascertain hospitals' progress toward improving data collection, improving access to culturally appropriate care, decreasing disparities, providing staff training, and increasing inter- and intra-organizational collaborations. A template will be developed and used for each set of documents, allowing the team to evaluate them as individual documents as they relate to documents submitted by other hospitals and as they change and develop over time (if applicable). The document review process will be ongoing. Analysts will work together as partner teams to review documents and develop a shared understanding of the template frameworks and the data in question. The team will review document data templates as they are relevant to specific RQs and hypotheses being addressed. As inter-rater reliability is established, analysts will work individually, coming together periodically to review their progress, share common themes, and discuss unexpected results or findings.

Team members will draft memos summarizing template data for routine review by the larger team. Document review data will be integrated with findings from other sources to address RQs and hypotheses.

7.4.6. Limitations

Quantitative Analyses

Our quantitative data sources and analytic approaches utilizing these data have several limitations. We will cautiously interpret results from multiple analytic methods together with qualitative findings to arrive at robust conclusions.

Surveys

The member experience surveys have several limitations, including the potential for recall bias, low response rates, and, most notably, we only anticipate receiving aggregate results, limiting our ability to perform weighting adjustments for non-response bias and repeated measurements. Some new items may require further refinement and validation. Finally, the member surveys are conducted by a third party for a purpose

distinct from evaluation, and the evaluation team is unlikely to have input into survey design and implementation.

Administrative Data Analyses

Analyses of administrative data are subject to limitations associated with the nature of such data being created for billing purposes, which may not reflect the actual presence of clinical conditions (e.g., if a member doesn't seek care or obtain a diagnosis) or use of a medication (e.g., if a drug is filled and not taken). Administrative data lack important clinical details such as laboratory values and non-billable services (e.g., certain forms of care coordination and management). For select quality measures and associated measurements, clinical data will be available. However, such data are expected only to be available for subsets of the populations and comparison groups of interest. Although rigorous quasi-experimental designs and statistical methods are planned, comparative analyses remain subject to unmeasured confounding. Another potential limitation will be missing data. In situations with substantial sociodemographic data missingness (e.g., of self-reported race and ethnicity), we will explore options for conducting analyses using imputed data. Furthermore, we will perform extensive sensitivity analyses to examine the plausibility of alternative explanations for our findings.

Qualitative Analyses

Our qualitative data sources and analytic approaches utilizing these data have several limitations.

Document Review

Relevant documents for review will be provided by MassHealth as they become available and from other sources (e.g., relevant state-wide groups) as they are identified. The volume of available documents poses a potential limitation. We will work with MassHealth to prioritize documents for the review process to ensure we review the most relevant and potentially significant documents. Another limitation is that the scope and content of the documents have been developed to support program implementation and determine eligibility for performance-based payments. The evaluation team has not provided input into the content of such documents.

KIIs

We may confront several limitations during the primary data collection process. As with any self-reported data, information collected in KIIs may be subject to recall bias. KIIs may be conducted by video conference, which represents a strength in terms of consistency of interview format and data collected across sites. Another strength is increased efficiency, which we anticipate will enable us to successfully schedule and collect information from a larger pool of respondents. However, video conference limits our ability to view organizational contexts firsthand. We will solicit responses from a range of staff and probe for specifics about processes and workflows to achieve a nuanced understanding of each organization's activities. For member interviews, videoconferencing may pose difficulties related to technology availability. Furthermore, some members may initially express interest when first recruited but may no longer be interested or may not participate in an interview due to various clinical or social factors.

Our interview procedures have been reviewed by a consultant with experience receiving and expertise in studying LTSS, who provided recommendations regarding the use of plain language and the presentation of materials. Historically, we have had a sufficiently representative pool of potential interviewees to draw from for interviews; therefore, we anticipate we will be able to complete the planned number of interviews, notwithstanding the limitations described here.

8. Health-Related Social Needs

8.1. Overview of Health-Related Social Needs (HRSN) Policy Domain

8.1.1. HRSN Policy Domain Goals

Under prior Demonstration periods, the Commonwealth has taken steps to offer programs and services (e.g., the Flexible Services Program (FSP) and the specialized Community Support Programs (CSP)) that address Health-Related Social Needs (HRSNs).[155] With this Demonstration, the pre-existing FSP and certain specialized CSP services are continued, modified, and expanded with the goals of continuing to improve access to and the quality and equity of care, and to continue the path of restructuring and reaffirming accountable, value-based care.[156]

8.1.2. HRSN Policy Domain Components and Desired Outcomes

The programs to address HRSNs include the FSP and three specialized CSPs. To be eligible for the respective programs, members must have a documented medical need for the services as defined by the specific program, and the services must be medically appropriate.[157] Specialized CSP is available in all delivery systems, while FSP is available only to ACO members. The programs are as follows:

Flexible Services Program

FSP targets MassHealth ACO-enrolled members 0 to 64 years of age who meet at least one of the health needs-based criteria (i.e., a behavioral health (BH) need, complex physical health need, activities of daily living or instrumental activities of daily living need, repeated emergency department (ED) utilization, high-risk pregnancy) and at least one risk factor (either experiencing homelessness/at risk of homelessness or at risk for a nutritional deficiency/nutritional imbalance due to food insecurity) defined by the Commonwealth. The FSP addresses the health-related social needs (HRSN) of eligible individuals in the areas of housing and nutrition by providing access to the following tenancy preservation and nutrition-sustaining supports:[158]

Tenancy Preservation Supports

Allowable housing supports consist of pre-tenancy and tenancy sustaining services, including tenant rights education and eviction prevention; housing transition navigation services; one-time transition and moving costs; housing deposits to secure housing, including application and inspection fees and fees to secure needed identification; medically necessary air conditioners, humidifiers, air filtration devices, and asthma remediation, and refrigeration units as needed for medical treatment; medically necessary home modifications and remediation services such as accessibility ramps, handrails, grab bars, repairing or improving ventilation systems, and mold/pest

[155] STC 15, page 115, verbatim; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[156] STC 2, page 3, from Commonwealth's goals; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[157] STC 15.5, page 119, verbatim; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[158] STC 15.5.a, page 119, nearly verbatim, minor modifications; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

remediation; case management, outreach, and education including linkages to other state and federal benefit programs, benefit program application assistance and application fees; and transportation to HRSN services for tenancy supports as described above.[159]

Nutrition Supports

Allowable nutrition supports include:

- nutrition counseling and education, including on healthy meal preparation;
- up to three meals a day delivered in the home, or private residence, for up to six months;
- additional nutrition support provided to the household of a child or pregnant individual identified as high risk, as defined in the risk and needs-based criteria and in accordance with program requirements;
- medically-tailored or nutritionally-appropriate food prescriptions delivered in various forms such as nutrition vouchers and food boxes, for up to six months cooking supplies that are necessary for meal preparation and nutritional welfare of a beneficiary when not available through other programs;
- case management, outreach, and education including linkages to other state and federal benefit programs, benefit program application assistance and application fees; and
- transportation to HRSN services for nutrition supports.[160]

Specialized Community Support Programs (Specialized CSPs)

MassHealth members, except MassHealth Limited members, who meet certain criteria related to BH needs are eligible to receive specialized CSP services. Specialized CSP services are outreach and support services that enable beneficiaries to use clinical treatment services and other supports, as described below. The CSP provider does not provide clinical treatment services. Specialized CSPs may also provide support for members' transition between service settings, including connecting with the member just prior to discharge from an inpatient or 24-hour diversionary setting and supporting them through the transition to accessing outpatient and community-based services and supports. Services vary with respect to hours, type, and intensity of services depending on the changing needs of the beneficiary. The following specialized CSPs target populations in need of specialized supports.[161]

Community Support Program for Homeless Individuals (CSP-HI)

CSP-HI is a specialized CSP service to address the HRSNs of members who are experiencing homelessness and are frequent users of acute health MassHealth

[159] STC 15.3.a, b, d, page 118, nearly verbatim, minor modifications. For a more detailed list of Tenancy Preservation Supports, see Attachment P, Protocol for Assessment of Beneficiary Eligibility and Needs and Provider. Qualifications for HRSN Services ; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[160] STC 15.3.b, c & d, page 118, nearly verbatim, minor modifications; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[161] STC 15.5.b, page 119, verbatim; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

services, as defined by EOHHS, or are experiencing chronic homelessness, as defined by the US Department of Housing and Urban Development.[162]

CSP-HI includes assistance from specialized professionals who can engage and support individuals experiencing homelessness in searching for permanent supportive housing, preparing for and transitioning to an available housing unit, and, once housed, coordinating access to physical health, BH, and other needed services geared towards helping them sustain tenancy and meet their health needs. In addition to the core CSP services,[163] CSP-HI services also include the following:

- Pre-tenancy supports, including engaging the member and assisting in the search for an appropriate and affordable housing unit
- Support in transition into housing, including assistance arranging for and helping the member move into housing
- Tenancy sustaining supports, including assistance focused on helping the member remain in housing and connect with other community benefits and resources[164]

CSP for Individuals with Justice Involvement (CSP-JI)

CSP-JI is a specialized CSP service to address the HRSNs of members with justice involvement and who have a barrier to accessing or consistently utilizing medical and BH services, as defined by EOHHS. CSP-JI includes BH and community tenure sustainment supports.

CSP-JI targets members with justice involvement living in the community in need of specialized services to improve and maintain health while transitioning back to the community and to promote successful community tenure. Individuals with justice involvement living in the community are defined as MassHealth-covered individuals released from a correctional institution within one year or who are under the supervision of the Massachusetts Probation Service or the Massachusetts Parole Board.[165]

In addition to the core CSP Services,[166] CSP-JI includes the following:

- If the referral source is a correctional institution, coordinating with the Behavioral Health for Justice-Involved Individuals (BH-JI) provider conducting in-reach services
- Ensuring that the CSP-JI service plan does not conflict with the member's probation and parole supervision plan, as applicable
- Addressing the member's criminogenic needs in the service plan goals, including interventions and strategies for developing alternative behaviors.[167]

[162] 103 CMR 461.402 Proposed

[163] 130 CMR 461.410.B.4 Proposed

[164] 103 CMR 461.410.C.1 Proposed, nearly verbatim, minor modification to reference core CSP services

[165] STC 15.5.b.ii, page 119, verbatim; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

[166] 130 CMR 461.410.B.4 Proposed

[167] 103 CMR 461.410.C.3 Proposed, nearly verbatim, minor modification to reference core CSP services

CSP Tenancy Preservation Program (CSP-TPP)

CSP-TPP is a specialized CSP service to address the HRSNs of members who are at risk of homelessness and facing eviction as a result of behavior related to a disability. CSP-TPP works with the member, the Housing Court, and the member's landlord to preserve tenancies by connecting the member to community-based services in order to address the underlying issues causing the lease violation.[168]

CSP-TPP provides tenancy-sustaining services, including tenant rights education and eviction prevention. In addition to the core CSP services,[169] CSP-TPP services also include:

- Assessing the underlying causes of the member's eviction and identifying services to address both the lease violation and the underlying causes
- Developing a service plan to maintain the tenancy
- Providing clinical consultation services as well as short term, intensive case management and stabilization services to members
- Making regular reports to all parties involved in the eviction until the member's housing situation is stabilized[170]

8.1.3. HRSN Policy Domain Implementation Plans and Timeline[171]

Flexible Services

During the period of the glide path for Flexible Services (i.e., until January 1, 2025), MassHealth will continue to administer the FSP as it did under the prior Demonstration, providing HRSN goods and services allowable in the Special Terms and Conditions (STCs) and in accordance with the HRSN Protocol. During this time, MassHealth will undertake activities to move Flexible Services into the ACO managed care structure. Information regarding that implementation has been incorporated into the HRSN Implementation Plan, the draft of which was submitted to CMS on June 30, 2023.

Specialized CSP

Fee-for-Service (FFS) Implementation

The state has developed programmatic and rate regulations that govern the implementation of specialized CSP services through its FFS delivery system. The state published the proposed regulations (programmatic and rates) for public comment in January 2023, and a public hearing was held on January 31, 2023. Final regulations went into effect in April 2023.

[168] 103 CMR 461.402 Proposed, verbatim

[169] 130 CMR 461.410.B.4 Proposed

[170] 103 CMR 461.410.C.2, nearly verbatim, minor modification to reference core CSP services

[171] Attachment T: HRSN Partial Implementation Plan, verbatim; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

The state also finalized its clinical criteria guidelines for specialized CSP services and developed and finalized specialized CSP provider applications and related materials to enroll FFS providers of specialized CSP services.

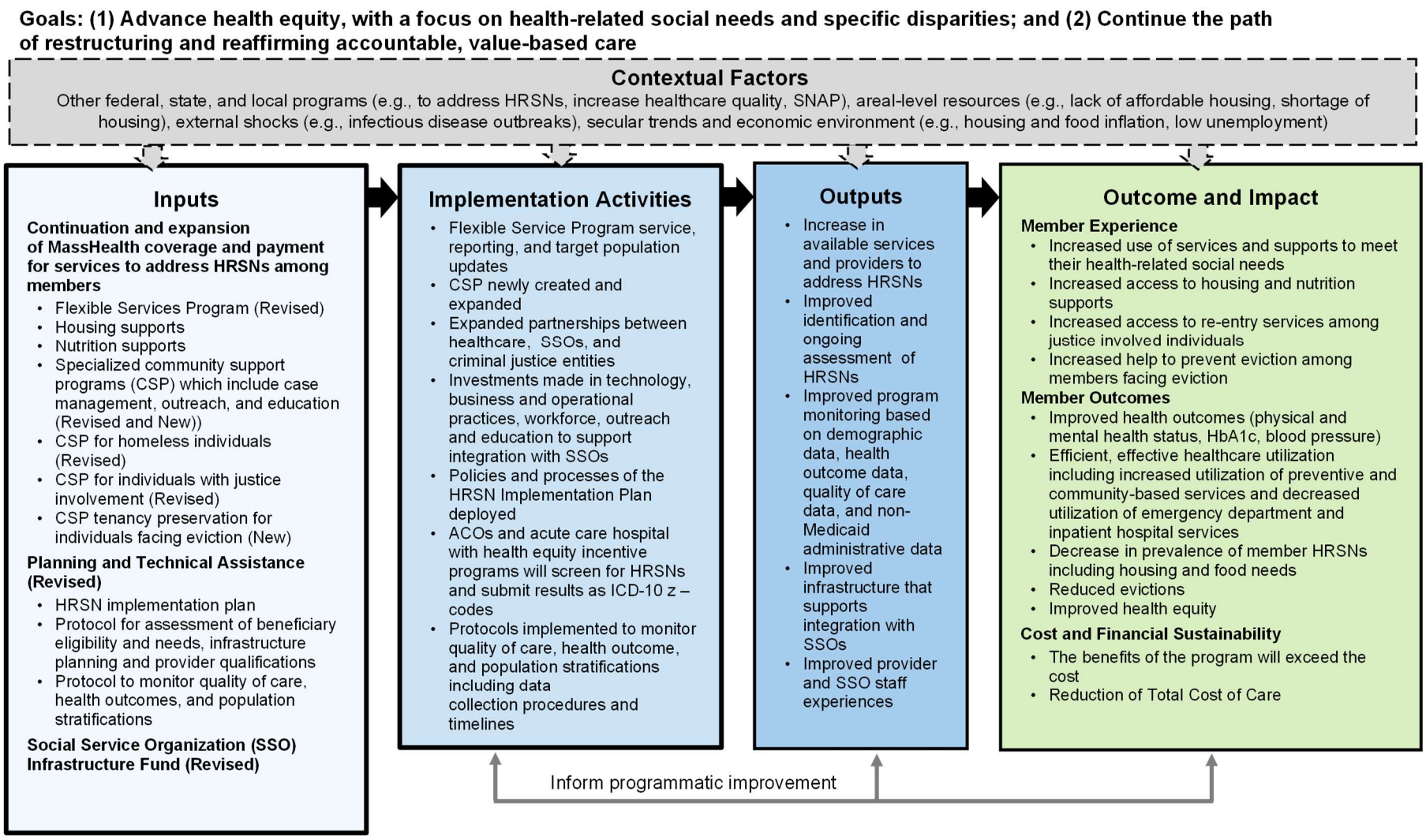
Managed Care Implementation

The state developed guidance for managed care plans related to contracting, service delivery, and payment for specialized CSP services. The Commonwealth worked with the managed care plans to develop performance specifications based on this guidance, which aligned to FFS regulations, for implementation in April 2023. The state directed plans to pay at least the rate established for specialized CSP services delivered through FFS. Specialized CSP services were incorporated in managed care contracts and rates, effective in April 2023.

8.2. Logic Model

The HRSN logic model in Figure 8-1 links the Demonstration Goals to the Demonstration Inputs, Implementation Activities, Outputs, and Outcomes and Impact of the Demonstration. The draft RQs and hypotheses that follow are guided by this logic.

Figure 8-1: Logic Model for the HRSN Component of the Demonstration



8.3. Research Questions and Hypotheses

The RQs and hypotheses focus on assessing the effectiveness of the HRSN services in mitigating the identified needs of MassHealth members.[172] The evaluation will use data on the prevalence of members' HRSNs (RQ7-2, 7-9, 7-12) and the provision of and member utilization of FSP and specialized CSP services (RQ7-7, RQ7-9 - RQ7-12). The RQs assess how the initiatives affect the utilization of preventive and routine care, utilization of and costs associated with potentially avoidable, high-acuity healthcare, and member physical and mental health outcomes (RQ7-9 - RQ7-12). The evaluation will also assess the effects of the FSP and Specialized CSP in reducing disparities in healthcare (RQ7-16).

The evaluation also assesses the effectiveness of the Social Service Organization (SSO) infrastructure investments to support the development and implementation of FSP (RQ7-13). In addition, the evaluation assesses whether and how FSP and Specialized CSP spending facilitates the development of additional clinical/community linkages for housing and nutrition SSOs (RQ7-14). A cost analysis will provide cost estimates of providing FSP and Specialized CSP services (RQ7-15). The evaluation also includes an assessment of potential improvements in the quality and effectiveness of downstream services that can be provided under the state plan authority, and associated cost implications (RQ7-10, 7-11).

Table 8-1 provides an overview of the RQs, hypotheses, data sources, study populations, measures, and analytic methods that will be used to evaluate HRSN policies. The elements are described in detail in Section 8.3 Data and Methods.

Table 8-1: Research Questions and Hypotheses for HRSN

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
RQ7-1 What was the prevalence of HRSN screening among ACO/ Managed Care Organizations (MCO) enrolled members and members seen in a hospital over the course of the Demonstration?	**H7-1.1** There was variation in the prevalence of HRSN screening associated with observable member characteristics (e.g., race, ethnicity, language, disability,	Administrative data: Demographics (2018-2027); Eligibility/Enrollment (2018-2027); Screened HRSNs (2018-2027)	ACO/MCO enrolled members (ACO n=~1.3 million; MCO n=~73,000); and members seen in a hospital (Encounter data: members receiving services at CHA n=~6,000; members receiving services at acute private hospitals n=~470,000)	HRSN screening rates (crude and adjusted prevalence ratios) by HRSN type, year, member demographics, ACO/MCO, and hospital	Descriptive Statistics (member); Generalized linear modeling to test for trends and identify factors associated with receiving HRSN screening (member)

[172] STC 17.6 and STC is the basis for narrative of this section; 1115 MassHealth Demonstration ("Waiver") | Mass.gov

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
	social orientation, and gender identity; RELDSOGI), ACO/MCO, and hospital. **H7-1.2** The prevalence of HRSN screening among ACO/MCO members and members seen in a hospital increased over time.				
RQ7-2 What was the prevalence of HRSN needs among MassHealth members over the course of the Demonstration?	**H7-2.1** MassHealth members had varying levels of HRSN needs by type (housing insecurity, food insecurity, issues with transportation, and issues obtaining utilities) and RELDSOGI demographic group. **H7-2.2** The prevalence of HRSN needs decreased over time.	Administrative data Demographics (2018-2027); Eligibility/Enrollment (2018-2027); Screened HRSNs (2018-2027)	ACO/MCO enrolled members (ACO n=~1.3 million; MCO n=~73,000); and members seen in a hospital (Encounter data: members receiving services at CHA n=~6,000; members receiving services at private hospitals n=~470,000)	Prevalence of HRSN by type, year, and member demographics, ACO/MCO, and hospital	Descriptive Statistics (member); Generalized linear modeling to test for trends and identify RELDSOGI factors associated with HRSN needs (member)
RQ7-3 What were the experiences of members receiving FSP/specialized CSP services, and what was	**H7-3.1** Recipients of FSP/specialized CSP services perceived their HRSN needs as	Interviews or Focus Groups (2024-2025; 2026-2027)	Recipients of FSP and specialized CSP services, member interviewees (n ≤ 30)	Qualitative Interview/Focus Groups (QI)/(FG): Member experience of HRSN screening,	Qualitative (member)

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
their understanding of the programs?	having been effectively identified. **H7-3.2** Members receiving FSP/specialized CSP services were satisfied with their service plans. **H7-3.3** Members receiving FSP/specialized CSP services understood the programs. **H7-3.4** Members receiving FSP/specialized CSP services described how the services they received decreased their HRSN needs. **H7-3.5** Members receiving FSP/specialized CSP services described how services they received improved their physical and/or mental health.			needs assessment, and service plan development Perceived changes in HRSNs and health by members and relationship to FSP/CSP programming; Member experiences of facilitators and barriers to program engagement; Perspective of program utility for members Variation in member experience between sociodemographic groups	

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
RQ7-4 What actions did MassHealth and Key Stakeholders take to implement, operate, integrate, and coordinate HRSN initiatives?	**H7-4.1** MassHealth implemented HRSN services; released policy and procedures and provided operational oversight (monitoring protocols). **H7-4.2** FSP and specialized CSP providers provided services, and in some cases, identified eligible members. **H7-4.3** ACOs/MCOs coordinated (identified, referred, provided care coordination) member services with FSP and specialized CSP providers.	Survey (open-ended questions) (2024, 2026); Interviews or Focus Groups (2024-2025; 2026-2027) Document Review (Ongoing)	MassHealth staff interviewees (H7-4.1) (n ≤ 5-10); FSP and specialized CSP staff interviewees (H7-4.2) (n ≤ 15-20); ACO (FSP+CSP) and MCO (CSP) providers staff and other stakeholder interviewees (staff of housing, justice, and other agencies) (H7-4.3) (n≤60);	QI/FG: Types and perceptions of policies, procedures, and operational oversight provided by MassHealth; Staff reported the type and frequency of information sharing between SSOs and healthcare organizations Staff reported changes to clinical practice associated with HRSN initiatives Variation in implementation workflows and processes for HRSN service delivery; Facilitators and barriers to service delivery; Number of new and continuing reciprocal relationships between SSOs and partner organizations for FSP; Perceptions of partnership formation and coordination	Qualitative (MH member, FSP/CSP staff, ACO staff, MCO staff, provider staff, stakeholders)

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
				between key stakeholders to deliver programming to members	
RQ7-5 How were members identified for referral to FSP and specialized CSP Providers?	**H7-5.1** Standardized processes and objective criteria were used by ACOs, MCOs, and partnering organizations (e.g., justice entities and housing agencies) for identifying needs, assessing eligibility, and providing referrals for each respective service.	Survey (open-ended questions) (2024, 2026); Interviews or Focus Groups (2024-2025; 2026-2027); Document Review (Ongoing)	ACO/MCO and specialized CSP providers and staff and/or staff of partnering organization interviewees (e.g., justice entities and housing agencies) (n≤60)	QI/FG: Barriers and facilitators to member needs identification, eligibility determination, and referral; Variability in needs identification, eligibility determination, and referral processes	Qualitative (staff)
RQ7-6 What were the FSP/specialized CSP service utilization and cost trends?	**H7-6.1** The service utilization and cost trends vary by HRSN program type and member demographics, comorbidity, and past utilization/cost.	Administrative data: Demographics (2020-2027 for FSP and CSP-HI, 2023-2027 for other specialized CSP); Eligibility/Enrollment (2020-2027 for FSP and CSP-HI, 2023-2027 for other specialized CSP); Claims/Encounters (2020-2027);	Recipients of FSP and specialized CSP services (Housing support n=~3,000 nutrition support n=~11,000; CSP-HI n=~2,000, CSP-JI n=~2,000, CSP-TPP n=500)	FSP and specialized CSP service utilization; FSP and specialized CSP service costs; **Note: All statistics by program type and year*	Descriptive Statistics (member); Generalized linear modeling to identify factors associated with identification/ screening, service utilization, and cost trends (member)

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
		FSP/specialized CSP (2020-2027 for FSP and CPS-HI, 2023-2027 for other specialized CSP)			
RQ7-7 What was the effect of the FSP and specialized CSP services on HRSNs?	**H7-7.1** FSP nutrition supports increase food security. **H7-7.2** FSP TPS increases housing security. **H7-7.3** CSP-HI and CSP-TPP increases housing security. **H7-7.4** CSP-JI increases housing security.	Administrative data: Demographics (2023-2027); Eligibility/Enrollment (2023-2027); HRSNs (2023-2027); FSP/Specialized CSP (2023-2027)	FSP nutrition services recipients (n=~11,000). Comparison groups of referred but not served (n=~1,000) and propensity-balanced non-recipients of services. (H7-7.1) (n= ~11,000); FSP housing services recipients (n=~3,000). Comparison groups of referred but not served (n=~300) and propensity-balanced non-recipients of services (n=~3,000). (H7-7.2) (n~400); Members receiving CSP-HI and CSP-TPP services that are ACO/MCO enrolled or seen in a hospital (H7-7.3) (n=~500-1,000); other members will be studied if data are available; Members receiving CSP-JI services that are ACO/MCO enrolled or seen in a hospital (n=~500-1,000); comparison group of referred but not served (H7-7.4); other	Statuses of respective HRSN needs among FSP and Specialized CSP services recipients	Descriptive statistics (member); Pre/Post comparison (CSP-HI, CSP-TPP) (member); Difference-in-difference model (FSP, CSP-JI) (member)

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
			members will be studied if data are available		
RQ7-8 What was the effect of FSP and specialized CSP on healthcare utilization and cost?	**H7-8.1** FSP and specialized CSP increased efficient, effective healthcare utilization, including (but not limited to) increased utilization of preventive and community-based services and decreased utilization of emergency department (ED) and inpatient hospital service. **H7-8.2** FSP and specialized CSP decreased the total cost of care (TCOC).	Administrative data: Demographics (2020-2027 for FSP and CSP-HI, 2022-2027 for other specialized CSP); Eligibility/Enrollment (2020-2027 for FSP and CSP-HI, 2022-2027 for other specialized CSP); Claims/Encounters (2020-2027); FSP/Specialized CSP (2020-2027 for FSP and CSP-HI, 2022-2027 for other specialized CSP)	Members receiving FSP (Housing support n=~3,000; nutrition support n=~11,000) and specialized CSP services. (specialized CSP: referred and served n=~2,000 per program). Comparison groups of referred but not served (FSP housing n=~300 and nutrition n=~1000; and n=~750 CSP-JI members from select providers who may report these data) and propensity balanced non-recipients of services ((Housing support n=~3,000; nutrition support n=~11,000; specialized CSP n=~2,000 per program)	Utilization PMPM, Cost PMPM by program type and eligibility criteria categories	Descriptive statistics (member); Pre/Post Comparison (CSP-HI, CSP-TPP) (member); Difference-in-Difference Model (FSP, CSP-JI) (member)
RQ7-9 What were the effects of FSP on physical and mental health outcomes?	**H7-9.1**. FSP services improved self-reported physical health. **H7-9.2**. FSP services improved self-reported mental health. **H7-9.3.** FSP nutrition support lowered	Administrative data: Demographics (2023-2027); Eligibility/ Enrollment (2023-2027); FSP (2023-2027)	FSP services recipients (Housing support n=~3,000; nutrition support n=~11,000) (H7-9.1 and H7-9.2). FSP nutrition supports participants with diabetes (n=~3,500). Comparison group of referred but not served members with	Physical health status; Mental health status; HbA1c level; Blood pressure; Self-reported physical health status;	Descriptive statistics (member); Pre/Post Comparison (H7-9.1, H7-9.2, H7-9.6) (member); Difference-in-Difference Model (H7-9.3, H7-9.4 - H7-9.6) (member)

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
	HbA1c levels among members with diabetes. **H7-9.4**. FSP lowered blood pressure levels among members with hypertension. **H7-9.5** The magnitude of FSP nutrition support services' effects on HbA1c levels among members with diabetes were dependent on the duration of services and, for nutrition support vouchers, the amount of the voucher. **H7-9.6**. Whether the effects of FSP on health outcomes will be sustained beyond the end of services will vary by service type.		diabetes (n=280) (H7-9.3 and H7-9.5); FSP services recipients with hypertension (Housing support n=~2,000; nutrition support n=~5,000). Comparison group of referred but not served members with hypertension (Housing support n=~150; nutrition support n=~ 420); Comparison group of propensity-balanced non-recipients (housing n=~2,000; nutrition n=~5,000)(H7-9.4); See study populations for H7-9.1-4 (H7-9.6)	Self-reported mental health status; HbA1c; Blood pressure See H7-9.1-4	
RQ7-10 Do nutritional FSP services for MassHealth members at risk for nutritional deficiencies achieve better outcomes when	**H7-10.1** Allowing nutritional supports to be delivered to MassHealth members and their households will lead	Administrative data: Demographics (2020-2027); Eligibility/Enrollment (2020-2027);	FSP members receiving nutrition support services for their household (TBD) Comparisons will be made to programs that operated in the	Number of individuals receiving nutritional supports; The total volume of services delivered;	Descriptive statistics (member); Pre/post comparison (member); Difference-in-difference model (member);

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
supports are delivered to MassHealth members and those in their household versus when supports are delivered to members only?	to more nutritional supports being delivered to those in food-insecure households. **H7-10.2** Among members with diabetes who share meals with those in their household, nutritional supports will improve A1c more when delivered to a member and their household versus when delivered to the member only. **H7-10.3** Nutritional supports will reduce food insecurity more when delivered to a member and their household compared with when only delivered to the member.	Claims Encounters (2020-2027); FSP (2020-2027); Member interviews (2024-2025; 2026-2027)	first FSP iteration in which household members did not receive FSP services. As diabetes is rare in children, we will first assess sample size and statistical power to assess feasibility prior to this research aim	A1c; Food insecurity; Member or proxy respondent experiences with and perceptions of nutrition support services delivered to the household	Qualitative: focus groups or interviews (member)
RQ7-11 Were the Social Service Organizations (SSO) infrastructure investments effective in supporting the development and	**H7-11.1**. The infrastructure investments supported the development and implementation of HRSN services.	Qualitative: Survey (2024-2025,2026-2027); Interviews or Focus Groups (2024-2025; 2026-2027); Document Review (Ongoing)	SSOs participating in Flexible Services and specialized CSP providers allocated SSO Integration Funding (n=~25-40)	QI/FG: Number and types of programs implemented by SSOs receiving	Qualitative (SSOs); Descriptive analysis

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
implementation of Flexible Services?				infrastructure investments; Facilitators and barriers to program implementation; Provider and staff perceptions of the value of SSO infrastructure investments to support development and implementation of FSP programming	
RQ7-12 What were the impacts of FSP/specialized CSP Medicaid spending on local investments on comparable services, for example, housing and nutrition?	**H7-12.1.** FSP and specialized CSP Medicaid spending strengthened clinical-to-community linkages and non-Medicaid funding to address HRSNs among FSP and specialized CSP providers. **H7-12.2.** FSP and specialized CSP providers partnered with local and state entities to identify and fill service gaps in HRSN services.	Qualitative Interviews or Focus Groups (2024-2025; 2026-2027); Document Review (Ongoing)	FSP and specialized CSP providers interviewees (n ≤ 35-50) FSP providers survey (n=~40)	QI/FG: Perceived changes in investments in comparable services locally over time; FSP and specialized CSP perspectives of facilitators and barriers to developing clinical-to-community linkages and obtaining non-Medicaid funding to address HRSNs; FSP and specialized CSP perspectives of facilitators and barriers to coordinating with local and state entities to	Descriptive statistics (providers); Qualitative (providers)

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
				identify and fill service gaps; Perspectives on changes to the landscape of domain of service delivery (e.g., housing services) as relates to FSP programming initiation and CSP programming changes	
RQ7-13. What were the costs of providing HRSN services?	**H7-13.1.** The costs of providing HRSN services were partially offset by the benefits of these programs in terms of lower costs for healthcare services, for example, decreased costs for emergency room visits and inpatient hospitalizations. H7-13.2 FSP programs were cost-effective when compared to the costs of medications or other healthcare services with known impacts on	Administrative data: Demographics (2020-2027 for FSP and CSP-HI, 2022-2027 for other specialized CSP); Eligibility/Enrollment (2020-2027 for FSP and CSP-HI, 2022-2027 for other specialized CSP); Claims/Encounters (2020-2027); FSP/specialized CSP (2020-2027 for FSP and CSP-HI, 2022-2027 for other specialized CSP)	FSP (Housing support n=~3,000 and nutrition support n=~11,000) and specialized CSP services recipients (n=~2,000 per program)	TCOC; Total costs of FSP services; Blood pressure, HbA1c	Descriptive analysis of program and healthcare costs (program, member); Difference-in-difference model to compare healthcare costs (program, member); Return on investment analysis (H7-13.1); Cost-effectiveness analyses (H7-13.2)

Research Questions[a]	Hypotheses	Data Sources (Evaluation Periods)[b]	Study Populations (Estimated Sample or Population Size- per Wave for Primary Data and per Year for Secondary Data)	Measures	Analytic Methods (Unit of Analysis)[c]
	cardiometabolic biomarkers.				
RQ7-14 To what extent did FSP and specialized CSP reduce health disparities by improving outcomes among demographic groups with a high prevalence of HRSNs?	**H7-14.1** FSP and specialized CSP improved outcomes among demographic groups with a high prevalence of HRSNs (H7-7.1-4).	Administrative data: Demographics (2020-2027 for FSP and CSP-HI, 2022-2027 for other specialized CSP); Eligibility/ Enrollment (2020-2027 for FSP and CSP-HI, 2022-2027 for other specialized CSP); Claims/Encounters (2020-2027); FSP/specialized CSP (2020-2027 for FSP and CSP-HI, 2022-2027 for other specialized CSP) See RQ7-7 See RQ7-8 See RQ7-9	FSP (Housing support n=~3,000 and nutrition support n=~11,000) and specialized CSP services recipients (n=~2,000 per CSP program): See RQ7 H.1-4 (H14.1); See RQ8 (H14.2); See RQ9 H.1-4 (H14.3)	See RQ7, 10, 11 with outcomes for RELDSOGI categories: See RQ7 (H14.1); See RQ8 (H14.2); See RQ9 H.1-4 (H14.3)	See RQ7-7, 7-8, 7-9: Descriptive analysis (member, demographic groups); Stratified analyses (member, demographic groups); Difference-in-difference model (member, demographic groups)

a. Research Questions developed based on the following STC sections 15.1 – 15.18; 1115 MassHealth Demonstration ("Waiver") | Mass.gov
b. Data sources are described in section 8.4.2 “Data Sources and Collection Methods” and in section 1.4.1 “Summary of Data Sources”
c. Analytic methods are described below in section 8.4.5 “Analysis Methods”

8.4. Data and Methods

8.4.1. Study Populations (Including Comparison Groups)

The study populations vary across research questions (See Table 8-1)

For the RQs that address HRSN screening, prevalence, or referral to HRSN programs (RQ7-1, 7-2, 7-6), the study population will be comprised of MassHealth ACO/MCO enrolled members and members seen in a hospital where these data will be available.

For RQs that address member-level FSP and specialized CSP program outcomes (RQ7-3, RQ7-6 to RQ7-10, 7-14), the study populations will be the members receiving FSP and specialized CSP services. Comparison groups and propensity score-based statistical approaches (e.g., matching, weighting) will be used to estimate the effects of the FSP, CSP-JI, and CSP-HI programs (RQ7-7 to RQ7-10, 7-14). For these RQs, we anticipate using the following comparison groups:

1. MassHealth members screened as eligible, but who never received or were delayed in receiving (e.g., on wait lists) services in the respective HRSN program (FSP and CSP-JI); where possible, we will leverage variation in program implementation to draw comparison groups of individuals who likely would have received services if they had been in a different delivery system
2. MassHealth members who were not screened and did not receive services in the respective HRSN but who closely resemble the individuals who did receive services (FSP)
3. MassHealth members who received FSP at the individual-level and not at the household-level as a comparison group (RQ7-10)
4. To the extent possible, MassHealth members who are homeless and not participating in CSP-HI

For RQs that address process or implementation questions, the study populations will be comprised of providers and staff of the applicable agency or group: MassHealth, FSP and specialized CSP service providers, ACOs, MCOs, justice entities, and/or local and state HRSN service providers (RQ7-4, 7-5, 7-11, and 7-12).

For the cost analysis (RQ7-13), the study population will be comprised of members receiving FSP and specialized CSP services and the staff of the applicable agency: MassHealth, FSP and Specialized CSP service providers, and ACOs/MCOs.

8.4.2. Data Sources and Collection Methods

The evaluation data sources and data collection for the Demonstration are described in Chapter 1 (Executive Summary), Section 1.4. This section also provides additional information on the data sources specific to FSP and specialized CSPs.

MassHealth administrative data will be the source for member HRSNs. We anticipate that HRSN data will be available for the subpopulations of MassHealth members that include ACO/MCO enrolled members and any member that presents to a hospital that contracts and participates in the HQEI (Chapter 7 (Hospital Quality and Equity)) with MassHealth. MassHealth will align its HRSN screening specifications with the CMS Social Drivers of Health screening tool when the final specifications are available. At this time, the MassHealth ACO/MCO contracts specify that the ACOs and MCOs must screen for housing insecurity, food insecurity, issues with transportation, the risk for violence, and issues obtaining utilities, including heating and internet. Identified needs will be submitted to MassHealth in the form of ICD-10 Z-codes on encounters and claims. MassHealth will begin utilizing Z-codes as part of the required HRSN screening in CY2024.

MassHealth administrative data and the Center for Health Information Analysis (CHIA) Enhanced Demographics Data File will be the source for member demographic data, including member race, ethnicity, language, disability, sexual orientation, and gender identity (RELDSOGI). MassHealth administrative RELDSOGI data is currently limited; however, MassHealth has plans to increase the collection of RELDSOGI data to include all members. Data will be collected by ACOs/MCOs and hospitals and it will also be collected as part of the MassHealth eligibility determination process. We expect that the data completeness will increase over time, with race and ethnicity data completeness occurring before data completeness is achieved for language, disability, and SOGI data. MassHealth plans to implement the new data collection activities throughout 2023.

MassHealth administrative data will be used to identify members referred for and who receive FSP services. Through at least the end of CY2024, ACOs will report data to MassHealth including lists of members receiving FSP services by type of service, risk factor (RF) and health needs-based criteria qualifying the individual for services, household level data (if receiving allowable nutritional supports for the household), and baseline plus follow-up data on self-reported mental and physical health, financial stress, food insecurity (if receiving nutritional supports), and their housing situation (if receiving housing supports).

MassHealth administrative data will be used to identify members receiving specialized CSP services. MassHealth will collect per diem services in the form of claims and encounters. A subgroup of CSP-JI providers that are also BH-JI vendors, per their BH-JI Contracts, will submit lists of members who were referred and who received CSP-JI to MassHealth. The list will include data that is not redundant to other MassHealth data collection efforts: demographics, referral source, service start date, service end date, the reason for stopping services, and housing and employment status at the end of services.

Access to administrative data from sources besides MassHealth will be explored, such as from the Department of Transitional Assistance (DTA) and DPH (e.g., for SNAP and WIC enrollment) and the Department of Correction (e.g., for incarceration dates). If available, such data will be useful for describing the characteristics of members,

adjusting for confounding, tracking potential program outcomes, and examining the heterogeneity of program effects.

Qualitative and survey data will be collected via staff surveys, member interviews or focus groups (which may include embedded survey items), staff interviews or focus groups, and document reviews. See Chapter 3 (Delivery System Reform) Section 3.4 Data and Methods for additional details on qualitative data collection methods.

8.4.3. Measures

The measures and methods that will be used to evaluate the FSP and specialized CSPs are listed in Table 8-1 by RQ.

The measures include population or subpopulation level descriptive statistics, for example, frequencies of member demographic characteristics and chronic conditions, HRSN screening rates (RQ7-1), the prevalence of HRSNs (RQ7-2, 7-9), counts of FSP and specialized CSP identification/screening, referrals, service utilization, and program costs (RQ7-7), per-member-per-month (PMPM) healthcare costs (RQ7-8, 7-13), PMPM healthcare utilization (RQ7-8), self-reported physical and mental health status (RQ7-9), biomarkers (RQ7-9, 7-10), and FSP and specialized CSP provider organization descriptive statistics on revenue, programs, and clients served (RQ7-12)

8.4.4. Covariates

For analyses conducted at the individual (member) level using administrative data, we will draw from a consistent set of characteristics, including age, sex, race, ethnicity, language, sexual orientation, gender identity, disability status (either client of the Massachusetts DMH or the DDS, or eligible for Medicaid due to disability), housing problems (e.g., three or more addresses in the year, homelessness by ICD-10 code, identified as homeless or housing unstable from other state data sources), the Neighborhood Stress Score, justice-involvement, the DxCG medical morbidity summary score, and the RxCG drug-based medical morbidity summary score. A narrower set of characteristics may be used for specific analyses as applicable (e.g., subgroup analyses among women would not use sex as a covariate).

Analyses conducted at the ACO level (or that incorporate clustering at the ACO level) will include covariates such as ACO type (academic hospital-anchored, community hospital anchored, physician-anchored), ACO size (number of MassHealth members, number of total enrollees across all payers), region, and experience with risk-based contracts with Medicare and commercial payers. Analyses conducted at the SSO, CSP, and/or FSP level (or that incorporate clustering at those levels) will include number of MassHealth members served, location, and number of years providing flexible services or specialized CSP services for MH members.

8.4.5. Analysis Methods

Mixed qualitative and quantitative methods will be used to answer the RQs of the HRSN policy domain and to evaluate the extent to which Demonstration initiatives and implementation activities advanced health equity and improved outcomes. For

quantitative analyses, we will begin with descriptive statistics by CY to characterize populations with specific HRSNs and the subsets who were screened, referred, and who ultimately received HRSN services. We will conduct multivariable modeling to examine adjusted trends over time and to identify characteristics (e.g., age, RELDSOGI, region, area-level socioeconomic stress) associated with process measures (e.g., screening, referral, starting services, stopping services). Outcome and cost measures will next be described by calendar year among recipients of HRSN services overall and within subpopulations of interest (e.g., with certain conditions or receiving specific HRSN services). As described in Chapter 3 (Delivery System Reform), we will proceed to apply quasi-experimental difference-in-difference methods with propensity-balanced comparisons to examine program effects on outcomes and costs while seeking to address observed sources of bias. Generalized mixed effects linear models will be used for modeling each type of outcome (e.g., dichotomous, continuous, rate) as appropriate and based on observed distributions, with random effects to account for clustering within healthcare organizations, geographic units, and repeated measurements within individuals over time. For the CSP-TPP and some FSP, CSP-HI, and CSP-JI outcomes, we will use a pre/post method to estimate program effects when adequate data are not available to implement comparative analyses.

For RQ7-13, a return on investment and cost-effectiveness analysis will be conducted for the FSP program consistent with the approach described for each in our evaluation design for the 2017-2022 Demonstration.[173]

RQ7-14 will assess the effects of FSP and specialized CSP on health disparities by conducting stratified descriptive and pre-post analyses by RELDSOGI categories and, where feasible, adding interaction terms between program effects and RELDSOGI categories to previously described difference-in-difference models and then calculating effect estimates for each category.

Qualitative methods will be used to assess FSP and specialized CSP members' experiences and understanding of programs (RQ7-3), the actions that MassHealth and key stakeholders took to implement, operate, and coordinate HRSN initiatives (RQ7-4), how members were identified for referral to programs (RQ7-5), whether SSO infrastructure investments were effective in supporting the development and implementation of FSP (RQ7-11), experiences of household level nutrition supports (RQ7-10), and the impacts of FSP and specialized CSP Medicaid spending on local investments in comparable services (RQ7-12). See Chapter 3 (Disability Systems Reform), Section 3.4 Data and Methods, for a description of qualitative analysis methods.

Using an embedded mixed methods approach, we will synthesize the quantitative and qualitative data. We will solicit an in-depth nuanced understanding of various members' experiences, examine how those experiences may be related to HRSN policy and

[173] Commonwealth of Massachusetts. (2022, September 29). *Revised Draft Independent Evaluation Interim Report. Massachusetts Medicaid 1115 Demonstration Extension 2017-2022.* Mass.gov. https://www.mass.gov/doc/cms-approved-interim-evaluation-report/download

practice innovation, and use these findings to explain pertinent trends and outcomes. For example, understanding members' perspectives on HRSN screening and utilization of FSP and specialized CSP services can help contextualize trends seen in utilization and outcomes.[174] Conversely, preliminary quantitative findings from the analysis of data from early in the Demonstration period can generate questions regarding underlying mechanisms that can then be explored in subsequent qualitative data collection and analysis.

8.4.6. Limitations

With the exception of qualitative data from key informant interviews (KII) and document review, which are subject to their own limitations as described in Chapter 3 (Delivery System Reform) Section 3.4, the evaluation of FSP and specialized CSP will rely on MassHealth administrative data (defined broadly to include member-level data reported by HRSN providers and ACOs/MCOs). The traditional MassHealth administrative data (member eligibility/enrollment and claim/encounters) is complete and available for the full Demonstration period; however, RELDSOGI, HRSN, and FSP and specialized CSP program administrative data are not as complete as the traditional MassHealth administrative data. We anticipate that the completeness will improve throughout the Demonstration period and that the MassHealth administrative data will be sufficient to implement the proposed research methods.

At this time, the ACO/MCO contracts specify that the ACOs and MCOs must screen for housing insecurity, food insecurity, issues with transportation, the experience of violence, and issues obtaining utilities, including heating and internet. Hospitals participating in the HQEI are also required to screen for HRSNs. However, we will not have HRSN data available for specialized CSP members in FFS delivery systems and who are not hospitalized. Members are also able to decline to answer any part of the screening. Due to the sensitive nature of screening for experience of violence, these questions are sometimes not asked in the same tool or setting as other questions, and results may be recorded elsewhere. This is important, for example, for ensuring a member is not put in a position of disclosing an experience of violence in front of the perpetrator.

For analyses affected by substantial missing data, we will use one or more missing data methods (e.g., last-observation carry forward, multiple imputation, inverse probability weighting), and if missingness is highly dependent on calendar time, we will perform stratified analyses by time period. We will conduct sensitivity analyses to examine the robustness of findings to alternative assumptions regarding missingness mechanisms and approaches to accounting for missingness. Some analyses may not be sufficiently powered to detect a program impact. For example, for H7-10.2, there may be very few referrals for services delivered at the household level for members with diabetes, and

[174] Creswell, J. W., & Clark, V. L. P. (2007). Designing and Conducting Mixed Methods Research. Thousand Oaks, CA: *Sage Publications.*

the feasibility of pursuing this research aim will need to be assessed after examining referral volume.

For members receiving FSP services, ACOs will report baseline and follow-up data on self-reported health, food insecurity (if receiving nutritional supports), and housing insecurity (if receiving housing supports). These data will augment the HRSN data and be used to assess the effects of FSP on food and housing needs. Unlike members receiving FSP services, these data will not be collected specifically for comparison groups or for those receiving specialized CSP services. Blood pressure and HbA1c levels will also be required submissions for ACOs as part of quality measure reporting. We expect that the completeness of member-reported and clinical outcome data will vary across FSP and specialized CSP programs and that the health outcome data will be the most complete for members receiving FSP services. These data will provide outcome data for the FSP comparison group and support the estimation of the effects of FSP on these clinical outcomes. We expect that MassHealth may increase the collection of outcome data for comparison groups and members receiving specialized CSP services during the Demonstration period.

After the end of CY2024, MassHealth may discontinue the baseline and follow-up data collection on self-reported health, food insecurity (if receiving nutritional supports), and housing insecurity (if receiving housing supports) and may discontinue the data collection to identify the comparison group of individuals that are referred to FSP but never participate. If the data collection is discontinued, we will change the data sources used to assess the effects of FSP based on what is available. We will use HRSN screening data before and after FSP participation to assess outcomes, and we will identify comparison groups from the population of MassHealth members with housing and/or food needs who never participated in FSP.

MassHealth administrative RELDSOGI data is currently limited; however, MassHealth plans to increase the collection of RELDSOGI data to include all members. ACOs, MCOs, and hospitals will collect data, and it will also be collected as part of the MassHealth eligibility determination process. We expect that the data completeness will increase over time, with race and ethnicity data completeness occurring before achieving data completeness for language, disability, sexual orientation, and gender identity. MassHealth plans to implement the new data collection activities throughout 2023.

Some program effect estimates (e.g., FSP and CSP-JI effects on HRSNs, healthcare cost, and utilization) will be based on a differences-in-differences model with one or more comparison groups of individuals that were referred to the respective program but did not receive services, and of individuals who were not screened or referred and did not receive HRSN services. Each comparison group is susceptible to potential unobserved sources of selection bias and confounding associated with their status as either screened but did not receive services (e.g., no longer needed the services) or not screened (less access or engagement with the healthcare system). Therefore, we are using propensity score balancing techniques to address confounding and multiple

comparison groups to interrogate the robustness of our findings regarding program effects.

We will also rely on qualitative findings to inform our quantitative analysis protocols and understand how programs are working from the perspectives of members, providers, and program administrators. To the extent that system-level conditions arise whereby members of certain ACOs/MCOs (or residents of certain parts of the state) have differential access to one or another category of HRSN service, we will seek to leverage this natural variation to produce less biased estimates of program effects.

Program effect estimates for CSP-TPP will be based on a pre/post model. This approach is vulnerable to bias if there are unobserved effects of time (e.g., secular trends, other time-varying interventions or confounders) that occur concurrently with the pre/post periods. To address this limitation, we will work with MassHealth to determine if administrative data can be used to define a suitable comparison group.

Appendices

Appendix A: Independent Evaluator Selection, Assurance of Independence, and Qualifications

A.1 Selection of Independent Evaluator and Assurance of Independence

Based on previous performance and familiarity with MassHealth programs, policies, and data systems, Massachusetts (MA) has selected the UMass Chan Medical School (UMass Chan) as the Independent Evaluator (IE) for the 2022-2027 Demonstration. The Independent Evaluation will also be informed by review and guidance from a Scientific Advisory Committee (SAC) and external reviewers comprised of nationally recognized experts in Medicaid systems transformation, program evaluation, and health services research.

As a state agency of the Commonwealth of Massachusetts, UMass Chan is subject to, participates in mandatory training regarding, and complies with, applicable state conflict of interest laws, including Mass. Gen. Laws, Ch. 268A and Ch. 268B. Under those laws and UMass Chan's Conflict of Interest Policy, employees must disclose potential financial conflicts of interest. In an Interdepartmental Service Agreement (ISA) between UMass Chan and MA, UMass Chan employees and agents are prohibited from having financial, personal, or professional interests in conflict with the state; UMass Chan is required to comply with all applicable state and federal requirements governing conflicts of interest; and UMass Chan must report potential conflicts of interest to MA. Further, the ISA for the 2017-2022 Evaluation specifically guaranteed UMass Chan's editorial control over the evaluation and reporting process. An ISA with similar language will be developed for the 2022-2027 Independent Evaluation and will include a statement of "no conflict of interest" that will be signed by the IE.

UMass Chan certifies that, to the best of its knowledge, there are presently no conflicts of interest in performing this work. Any conflicts that arise during the evaluation will be reported to the UMass Chan Conflict of Interest Committee to determine the appropriate course of action to manage or remove the conflict, including reporting the conflict to MA pursuant to the ISA.

UMass Chan will conduct a fair and impartial evaluation and develop independent reports on findings from the Independent Evaluation.

A.2 UMass Chan Resources and Leadership for the Independent Evaluation

Faculty members and staff participating in the Independent Evaluation are drawn from the UMass Chan Department of Population and Quantitative Health Sciences (PQHS), the Research & Evaluation unit of ForHealth Consulting at UMass Chan, and the Department of Family Medicine and Community Health (FMCH) at UMass Chan.

The mission of PQHS is to advance science and improve population health. Formed in 2009, PQHS is located on the UMass Chan campus and includes a broad array of research and evaluation expertise. Several PQHS faculty will play key roles in the

Independent Evaluation: Matthew Alcusky, PharmD, PhD, will serve as Principal Investigator for the IE and will serve as lead researcher for several policy Domains. Elaine Wang, PhD, will serve as PI with Dr. Alcusky and lead several policy Domains. Yara Halasa-Rappel, DMD, PhD, will serve as a Co-PI and Co-evaluation lead for the Behavioral Health and Workforce Initiatives Domains. Jay Himmelstein, MD, MPH, will serve as Senior Policy Advisor for the evaluation and coordinate input from the scientific advisory committee and external reviewers. Arlene Ash, PhD, will serve as the Senior Scientist and advise on advanced analytic methods for the evaluation. PQHS also houses the UMass Chan Quantitative Methods Core (QMC), which provides biostatistical, epidemiological, and other methodological consultation and technical support for research across the campus. Eric Mick, PhD, PQHS faculty and former Assistant Director of the QMC, will lead the statistical team for the Demonstration evaluation.

ForHealth Consulting, formerly known as Commonwealth Medicine, is the public sector consulting arm of UMass Chan. The Research & Evaluation unit of ForHealth Consulting, led by Elaine Wang, PhD, includes UMass Chan faculty and staff with deep experience in evaluating Medicaid and public health programs and routinely partners with health and human services agencies, nonprofits, and other organizations to evaluate program outcomes and support evidence-based policymaking. Yara Halasa-Rappel, DMD, PhD, will serve as a Co-PI and Co-evaluation lead for the Behavioral Health and Workforce Initiatives Domains. Susan Pfefferle, PhD, will serve as Co-PI and lead for the Behavioral Health domain. Jack Gettens, PhD, will serve as Co-Investigator with a focus on the Health-Related Social Needs Domain. The multi-disciplinary researchers in the unit focus on applied research and data analytics using qualitative and quantitative methods. Staff from multiple disciplines leverage education and training in areas such as health policy, social policy, epidemiology, health economics, public health, and sociology. They use a community-participatory approach to collect, generate, analyze, and summarize information that advances policies, programs, and services to a higher level of impact and performance.

The Department of FMCH emphasizes the relationship between clinical practice and community health with a particular focus on serving vulnerable populations by providing clinical care, medical education, and research in health policy. Being one of UMass Chan's founding departments, FMCH works to advance the fitness of populations and communities and advance the needs of the Commonwealth's underserved populations. FMCH faculty will play key roles in the Independent Evaluation as Drs. Susan Pfefferle and Jack Gettens are also faculty of the department.

The Draft Evaluation Design has been informed by review and feedback from the 1115 Demonstration Scientific Advisory Committee (SAC), and additional external reviewers, including nationally recognized experts in Medicaid program evaluation and health services research, convened to ensure scientific rigor and feasibility of the evaluation design. It is anticipated that SAC members and external reviewers will be involved on an ongoing basis to help address evaluation implementation challenges and review evaluation deliverables as appropriate.

A.3 Faculty Leadership and Subject Matter Experts

Matthew Alcusky, PharmD, PhD
Assistant Professor, Department of Population and Quantitative Health Sciences (PQHS)
Principal Investigator and Lead Researcher for Delivery System Reform, Health Related Social Needs, and Hospital Quality and Equity Initiative Domains

Dr. Matthew Alcusky will serve as a Principal Investigator with Dr. Wang and will be responsible for integrating and supporting evaluation efforts across all Demonstration goals. Dr. Alcusky and Dr. Wang will oversee the core research team and faculty investigators and function as the day-to-day scientific liaisons with MassHealth and CMS as needed. Dr. Alcusky and Dr. Wang will regularly meet with MassHealth leadership to oversee workstreams and data access essential for the Independent Evaluation.

Dr. Alcusky is a pharmacoepidemiologist and health services researcher focused on generating evidence from mixed methods data sources to inform clinical practice and guide health policy. His pharmacoepidemiologic research has focused on the study of prescribing patterns, comparative safety and effectiveness, and medication-related healthcare utilization, often in vulnerable segments of the Medicaid and Medicare populations. Dr. Alcusky has a history of working with MassHealth and deep knowledge of their programs. Together with Dr. Ash and Dr. Mick, he develops and refines predictive models for risk adjustment of ACO quality measures and to adjust payments to managed care entities, including the MassHealth ACOs and their primary care providers. He is also developing and implementing methods to set value-based prices for pharmaceuticals to support MassHealth's value-based pricing initiative. He currently serves as a Principal Investigator for the Independent Evaluation of MassHealth's 2017-2022 1115 Demonstration with responsibility for leading the evaluation of the state's Delivery System Reform Incentive Payment (DSRIP) Program.

Ying (Elaine) Wang, PhD
Associate Professor, PQHS and Executive Director, Research & Evaluation, ForHealth Consulting
Principal Investigator and Lead Researcher for the Coverage and Eligibility, Workforce Initiatives, and Safety Net Care Pool Domains

Dr. Elaine Wang will serve as a Principal Investigator with Dr. Alcusky and will be responsible for integrating and supporting evaluation efforts across all Demonstration goals. Dr. Alcusky and Dr. Wang will oversee the core research team and faculty investigators and function as the day-to-day scientific liaisons with MassHealth and CMS as needed. Dr. Alcusky and Dr. Wang will regularly meet with MassHealth leadership to oversee workstreams and data access essential for the Independent Evaluation. She also leads the Coverage and Eligibility and Safety Net Care Pool domains and co-leads the Workforce Initiatives with Dr. Halasa-Rappel.

Dr. Wang is a mixed methods health services and health policy researcher with more than 20 years of policy research experience. She currently serves as the

executive director of Research & Evaluation at ForHealth Consulting. She has deep experience in 1115 Medicaid Waiver evaluation, value-based purchasing programs, and children with special health needs (e.g., those with life-limiting conditions and autism), amongst her other fields of interest. She has led various projects for the Centers for Medicare & Medicaid Services, including leading a Medicare Part D star rating project, developing performance measures for monitoring Medicare Parts C and D plans, and helping create a Qualified Health Plan Quality Rating system. Before joining UMass Chan, Dr. Wang held leadership roles at policy consulting firms, including the American Institutes for Research and IMPAQ International (now merged). She received her doctoral degree from the School of Public Policy at the University of Maryland Baltimore County.

Yara Halasa-Rappel, DMD, PhD
Assistant Professor, PQHS and Senior Project Director, Research & Evaluation, ForHealth Consulting
Co-PI and Co-lead for the Behavioral Health and Workforce Initiatives Domains

Dr. Yara Halasa-Rappel will serve as the Co-PI and Co-evaluation lead for the Behavioral Health and Workforce Initiatives Domains. Dr. Halasa-Rappel has over 18 years of experience conducting health-related research in the United States and internationally. Her research focuses on evaluating healthcare programs and technologies, health financing, and economic evaluation of health and health-related projects. She has experience analyzing the cost-effectiveness of randomized control trials in the U.S. and Africa, in addition to Real-World Data such as enrollment and claims data, electronic medical, and national surveys to inform policy change. As the senior project director of the Massachusetts 1115 DSRIP Demonstration, she estimated the ROI, analyzed data from primary and secondary sources, and coordinated and synthesized findings from the qualitative and quantitative components. Dr. Halasa-Rappel authored over 50 articles and book chapters, including key publications on dengue, oral health, and health financing. She earned her PhD in Social Policy from the Heller School at Brandeis University in Waltham, Massachusetts, her Master of Science in Health Care Policy, Management, and Economics from Bocconi University in Milan, Italy, and her DMD from Aleppo, Syria.

Susan Pfefferle, PhD
Assistant Professor, Department of Family Medicine and Community Health (DFMCH) and Senior Research Scientist, Research & Evaluation, ForHealth Consulting
Co-PI and Lead for Behavioral Health Domain

Dr. Susan Pfefferle will serve as co-PI and lead for the Behavioral Health domain. Dr. Pfefferle has over 20 years of expertise in BH services research, program evaluation, qualitative and mixed methods research, and BH policy. Her studies focus on BH and health services for underserved populations. She has conducted numerous evaluations of programs providing services to Medicaid beneficiaries with SMI and OUD and jail diversion programs with people with BH diagnoses for federal agencies and states. She currently leads the evaluation of the Massachusetts

Behavioral Health Helpline and is a subject matter expert for the evaluation of the BH Roadmap evaluation.

Dr. Pfefferle received a PhD in Social Policy from the Heller School at Brandeis University, where she was a NIMH trainee, and a MEd in Counseling Psychology from the University of Massachusetts. She was a NIMH post-doctoral fellow at Washington University in St. Louis, where she studied the integration of BH services in community health programs.

Joanne Nicholson, PhD
Professor, Institute for Behavioral Health/Schneider Institutes for Health Policy, the Heller School at Brandeis University, and Adjunct Professor of Psychiatry, UMass Chan Medical School
Co-PI and Senior Scientist for Qualitative Studies

Dr. Joanne Nicholson will serve as the lead investigator, providing oversight on all qualitative interviewing, data collection, and analysis efforts, and will contribute to mixed methods approaches to address relevant research questions in the Demonstration evaluation. She serves in a similar role as Co-PI for the 2017-2022 1115 independent evaluation.

Dr. Nicholson is a clinical and rehabilitation psychologist and health services researcher with over 30 years of experience focusing on individuals and families living with BH conditions and disabilities. She is an internationally recognized expert and consultant on adapting treatments and services to meet the needs of families in which parents have mental illness and/or substance use disorders. As an implementation scientist, Dr. Nicholson has led numerous studies of interventions adapted to new target populations or service settings. She currently chairs the Scientific Advisory Group for an EU-funded study to replicate a model intervention for parents with mental illness and their families in eight European countries. She is particularly interested in demonstrating the effectiveness of strategies for changing provider practice and in community engagement in research. She has been the PI/PL on studies funded by NIDILRR, NIH, PCORI, SAMHSA, NSF, private foundations, and industry sources. She consults on PCORI-funded studies currently underway on perinatal health and BH services for Black women, women in rural communities, and perinatal psychiatric consultation. Dr. Nicholson is an invited member of the SAMHSA National Advisory Committee on Women's Services.

A.4 UMass Chan Subject Matter Experts:

Arlene Ash, PhD
Professor and Division Chief, Biostatistics and Health Services Research, Department of Quantitative Health Sciences
Co-Investigator and Consulting Methodologist

Dr. Arlene Ash will serve as a consulting methodologist, providing advice on advanced analytic methods for the evaluation process and outcome measures.

Dr. Ash is professor and division chief for Biostatistics and Health Services Research in QHS at UMass Chan and an internationally recognized methods expert in health services research. She pioneered tools for using administrative data to monitor and manage healthcare delivery systems, including those now used by the Medicare program. Dr. Ash was one of six appointees to the COPSS-CMS white paper project: "Statistical Issues in Assessing Hospital Performance." Her UMass Chan team has helped MassHealth incorporate social determinants of health into Medicaid/CHIP global payments.

Jack Gettens, PhD
Senior Research Scientist, Research and Evaluation, ForHealth Consulting
Assistant Professor, Family Medicine and Community Health
Co-investigator with a focus on Health-Related Social Needs Domain and Senior Biostatistician

Dr. Jack Gettens will serve as Co-Investigator with a focus on the Health-Related Social Needs Domain. Dr. Gettens has over 15 years of expertise in health services research, program evaluation, and qualitative and quantitative research methods. His studies focus on the healthcare and well-being of people with disabilities, public health, and supports for justice-involved individuals. He currently leads the evaluation of the MassHealth Behavioral Health Supports for Justice-Involved Individuals (BH-JI) program. Dr. Gettens' recent work includes a mixed method study (focus group, population survey, and claims analysis) of the employment-related health insurance needs of working-age persons with disabilities and a qualitative study assessing how low-income Social Security Disability Insurance participants "make ends meet." Dr. Gettens received a PhD in Social Policy from the Heller School at Brandeis University.

Kurt Hager, PhD, MS
Instructor, PQHS
Co-Investigator with a focus on Health-Related Social Needs Domain

Dr. Kurt Hager will serve as a co-investigator and content expert in the HRSN domain. His research focuses on the effectiveness of nutritional interventions and policies on chronic disease in the U.S. This includes evaluations of produce prescriptions and medically tailored meals integrated into clinical care that leverage quasi-experimental methods similar to the analyses proposed in the EDD. He has been involved in policy initiatives at the Center for Health Law and Policy Innovation at Harvard Law School and as a steering committee member of the National Produce Prescription Collaborative to advance HRSNs coverage in Medicare and Medicaid. Dr. Hager's training and research also include policy modeling and implementation science using mixed methods.

Jay Himmelstein, MD, MPH
Professor, PQHS and Family Medicine and Community Health
Co-Investigator and Senior Health Policy Advisor

Jay Himmelstein, MD, MPH, will serve as a senior policy advisor to the 2022-2027 IE and coordinate input from the Scientific Advisory Committee and external

reviewers and will be responsible for communicating and incorporating reviewer feedback into the evaluation design and related deliverables.

Dr. Himmelstein is a professor in the departments of PQHS and FMCH. His professional career in research, policy development, and service has been dedicated to improving healthcare and health outcomes for those served by the public sector. He has placed special emphasis on Medicaid programs and health services for people with disabilities and is a nationally recognized physician, educator, and researcher. Dr. Himmelstein was the PI and executive sponsor for the 2017-2022 IE and has been involved with developing and evaluating Medicaid programs and policies for more than 25 years. He has authored over 100 peer-reviewed articles, chapters, and technical reports. He is an elected member of the National Academy of Social Insurance and has served on review committees for the National Academy of Science and several editorial review boards.

Eric Mick, ScD
Associate Professor of Epidemiology, Department of Population and Quantitative Health Sciences
Co-Investigator and Senior Statistician

Dr. Eric Mick will serve as Co-Investigator and Senior Statistician. Dr. Mick will be responsible for supervising study biostatisticians and for developing, managing, and analyzing the administrative data that will be used to track implementation efforts and outcomes. Dr. Mick will be responsible for translating the research design into clearly documented working code. He will be a member of the overall evaluation leadership team, participating in leadership meetings and coordinating meetings with MassHealth, as appropriate.

Dr. Mick was trained as a psychiatric and genetic epidemiologist, and his methodological areas of interest are epidemiology (descriptive and clinical), analysis of “big-data” (genomic research and administrative databases), and multivariate methods for longitudinal data. His current focus is on informing healthcare delivery reform through risk adjustment modeling of total cost of care (TCOC) and measures of quality.

A.5 Independent Evaluation Scientific Advisory Committee (SAC) and External Reviewers

The MA 1115 Demonstration Scientific Advisory Committee (SAC) and additional external reviewers have provided feedback on the evaluation design and analytic approaches in this Draft Demonstration Evaluation Design Document. SAC members and external reviewers were selected based on their expertise in health services research expertise and methodological experience in evaluating the impact of policy changes on healthcare systems and populations of interest. Reviewers have provided feedback and guidance on the proposed evaluation methods and data sources to ensure that the proposed approaches in the EDD are feasible and meet prevailing standards of scientific and academic rigor.

The SAC will be consulted over the life of this evaluation as scientific advisors and will be asked to review CMS deliverables. The SAC will be available as needed to consult with IE faculty to address potential obstacles to the evaluation and provide guidance relating to specific analyses, interpretation of findings, and may collaborate on reports in the scientific literature.

SAC Members:

K. John McConnell, PhD
Director, Center for Health Systems Effectiveness, Oregon Health & Sciences University

Dr. McConnell has several areas of expertise relevant to this evaluation. He is the principal investigator for the Oregon 1115 Demonstration evaluation team. His health economics research has addressed total costs of care (in the context of provider accountability), displaced cost estimates, and Medicaid quality of care. He has studied the impact of CCO (ACO-type) implementation on coordination, access, quality, outcomes, costs, avoidable care (linked database evaluation), and behavioral and physical healthcare integration in Medicaid populations. Dr. McConnell has also conducted research on costs and outcomes in alternate substance abuse care pathways and developed comparison populations for Waiver evaluation, including interstate data. His current work focuses on understanding the effectiveness of reform of the Medicaid payment and delivery system, with Oregon serving as a leading example.

Dr. McConnell is a health economist and Director of the Center for Health Systems Effectiveness at OHSU. His research has also addressed emergency and trauma care, organizational management, BH, and state health policy.

Deborah Peikes, MPA, PhD
Vice President, Measurement and Evaluation, Blue Cross Blue Shield of Massachusetts

Dr. Peikes's areas of expertise relevant to this evaluation include the impact of alternative primary care models on health outcomes and qualitative studies of healthcare systems. Her expertise includes program evaluation, evaluation of patient-centered medical homes, primary care effectiveness, and integration of care for persons with multiple comorbidities.

Dr. Peikes is a leader in research on value-based care, how to improve the delivery of primary care through the patient-centered medical home and related models of care, care coordination and disease management for people with chronic illnesses, and the health, employment, and social integration of beneficiaries with severe disabilities. Dr. Peikes spent over two decades leading evaluations of some of CMS's leading care delivery and payment reform initiatives as a Senior Fellow at Mathematica Policy Research and was formerly the Vice President of Healthcare Research at Humana. She currently serves on the Board of Governors of the Patient-Centered Outcomes Research Institute.

Rebecca Wells, PhD
Professor, Management, Policy and Community Health, University of Texas School of Public Health

Dr. Wells' experience relevant to this evaluation includes being the principal investigator for the first Texas 1115 Demonstration and DSRIP evaluation. Her expertise includes program and infrastructure change, implementation and performance measures for DSRIP-funded initiatives, BH, substance abuse disorder program effectiveness, and evaluating the impacts of community support services programs.

Dr. Wells is based at the University of Texas Health Science Center (UTHealth) School of Public Health, where she is currently involved in a team-based intervention to improve ambulatory care and a study of intersectoral cooperation. She also serves on the University of North Carolina-based National Maternal and Child Health Workforce Development Center, where she trains public health leaders in facilitating both internal transformation and intersectoral adaptive change.

External Reviewers:

The subject matter experts listed below provided focused reviews on early drafts of specific domain chapters.

Katherine Howitt, MA; Coverage and Eligibility Domain
Director, Massachusetts Medicaid Policy Institute, Blue Cross Blue Shield of Massachusetts Foundation

Ms. Howitt develops and leads the strategic policy and research agenda on MassHealth for the Foundation. She has expert knowledge of Medicaid and MassHealth, healthcare system change, and economics. Previously, she was the associate director of policy at Community Catalyst, responsible for the Medicaid policy agenda. Ms. Howitt contributed her expertise to a review of the Coverage and Eligibility domain.

Michaela Kerrissey, PhD; Delivery System Reform Domain
Assistant Professor of Management, Health, and Policy Management, Harvard T.H. Chan School of Public Health

Dr. Kerrissey researches the work of teams that address problems crossing organizational boundaries in healthcare. She is interested in the innovation and integration of services in organizations. In addition to teaching at the School of Public Health, Dr. Kerrissey offers courses at Harvard University's business and medical schools. Prior to her career in academia, she was a consultant with The Bridgespan Group. Dr. Kerrissey brought her expertise in measuring the integration of healthcare services and survey methods to a review of the Delivery System Reform Domain.

Chris Sheldrick, PhD; Behavioral Health Domain
Research Associate Professor Health Law, Policy & Management, Boston University School of Public Health

Dr. Sheldrick researches screening and clinical decision-making. He has experience developing, implementing, and evaluating screening protocols. He was part of the team that created the Survey of Wellbeing of Young Children and is interested in identifying and helping children with developmental and behavioral needs. Dr. Sheldrick teaches at Boston University and is a recipient of a KM1 fellowship.

Joan Kaijala, MPP; Workforce Initiative Domain
Consultant

Ms. Kaijala is an expert in the health professions workforce, health equity, organizational development, and program management. She has conducted public health leadership trainings, researched and developed a survey of public health professionals, and is working on the development of the New England Rural Health Leadership Training Center. Ms. Kaijala was also involved with the creation of the Massachusetts Health Care Workforce Center and its loan repayment programs. Ms. Kaijala drew on these experiences while reviewing the Workforce Initiative domain.

Additional external reviewers will be added as needed.

Appendix B: Specifications of Quantitative Measures Derived from Existing Sources

B.1 Overview

The table below lists process and outcome measures derived from existing data sources to be used in the quantitative evaluation of Demonstration Chapters 2 through 8. These measures were selected to quantify the Demonstration's effects on healthcare access, program enrollment, care processes, needs identification, integration, healthcare utilization, member outcomes, and healthcare costs.

B.2 Measure Selection

Accountability measures comprising the Massachusetts Executive Office of Health and Human Services (EOHHS) Accountable Care Organization (ACO) Quality and Health Equity and the Community Partner measure slates were selected by MassHealth after iterative feedback from stakeholders in Massachusetts and from CMS. Measures that were not selected by MassHealth for accountability purposes but that were deemed important for evaluating Demonstration policies will also be studied. Additional quality measures were selected from established measure stewards, giving preference to measures that were endorsed by the National Quality Forum (NQF) to study Demonstration effects on processes and outcomes across other important conceptual areas, particularly those included in the evaluation Logic Models. Standard epidemiologic measures (e.g., rates, proportions) will also be calculated to track changes in utilization and costs over the study period. Similar to other state evaluations, measure selection accounts for outcomes specific to this Demonstration.

The measure information in the tables below is organized into seven sections, each corresponding to one policy domain. We have summarized important information for the measures listed in the table, including the steward, NQF measure number (if applicable), NQF endorsement, and national benchmarks from the Centers for Medicare and Medicaid Services (CMS), National Council for Quality Assurance (NCQA), and Agency for Healthcare Research and Quality (ARHQ), if available. Measures operationalized by MassHealth and UMass Chan do not have national benchmarks.

Note: Some measures are repeated across chapters for different populations. The titles of these measures will be included in each chapter where they are being calculated, with a reference to the chapter where the measure details were provided.

Measure Stewards

Measure stewards are recognized as expert organizations involved in developing measure definitions. The stewards used in this evaluation include:

- National Council for Quality Assurance (NCQA): A national nonprofit organization that monitors healthcare quality and accredits health plans. The Healthcare Effectiveness Data and Information Set (HEDIS) developed and maintained by NCQA is a tool used by many American health plans to measure performance on various aspects of healthcare and services provided

- Agency for Healthcare Research and Quality (AHRQ): A federal agency that strives to improve the quality and safety of American healthcare systems
- Choosing Wisely: A national initiative that works with patients and clinicians to avoid wasteful and/or unnecessary healthcare services
- MassHealth: The program that administers Medicaid and the Children's Health Insurance Program in Massachusetts
- Dental Quality Alliance: An alliance established by the American Dental Association to advance performance measurement as a means to improve oral health, patient care, and safety through a consensus-building process.

Measure Data

Measure information in this Appendix includes national or state benchmarks where available. CMS benchmarks are presented here at the 50th and 90th percentile. The other benchmarks appear as rates (ARHQ measures) or percentiles. Most measures will be calculated from the following data sources:

- Massachusetts Medicaid Administrative Data: This member-level database is comprised of eligibility, enrollment, and billing records for healthcare services for the MassHealth member population.
- Health Insurance Exchange/Integrated Eligibility Information System (HIX/IES) data: The HIX/IES data set contains Medicaid ID, demographic information, date of enrollment/renewal, whether the individual lost coverage or had their aid category changed after 90 days, and reason for loss of coverage.
- Clinical Information Reported by ACOs: These extracts will include data for hybrid quality measures that require clinical information
- Other: A few evaluation measures utilize data from other sources, such as the Massachusetts Uncompensated Care Cost reports, Safety Net Hospital reports, and program data from MassHealth, as detailed below.

Measure Information by Policy Domain

Chapter 2: Coverage and Eligibility

Measure:	Adult Access to Preventive/Ambulatory Health Services (AAP)
Steward	National Committee on Quality Assurance
NQF Endorsed	No
Description	This measure is used to assess the percentage of members 20 years and older who had an ambulatory or preventive care visit. Medicaid members who had an ambulatory or preventive care visit during the measurement year.
Numerator	One or more ambulatory or preventive care visits during the measurement year
Denominator	Members 20 years of age and older as of December 31 of the measurement year
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	Annual Primary Care Visit
Steward	MassHealth
NQF Endorsed	No
Description	Percentage of enrollees 18 to 64 years of age who had an annual primary care visit in the measurement year.
Numerator	Number of enrollees who had at least one primary care visit during the measurement year.
Denominator	Eligible population
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	Immunizations for Adolescents (IMA)
Steward:	National Committee on Quality Assurance (#1407)
NQF Endorsed:	Yes
Description	The percentage of adolescents 13 years of age who had the recommended immunizations (meningococcal vaccine and one tetanus, diphtheria toxoids and acellular pertussis vaccine (Tdap) or one tetanus, diphtheria toxoids vaccine (Td) by their 13th birthday.
Numerator	Adolescents 13 years of age who had one dose of meningococcal vaccine and one tetanus, diphtheria toxoids and acellular pertussis vaccine (Tdap) or one tetanus, diphtheria toxoids vaccine (Td) by their 13th birthday.
Denominator	Adolescents who turn 13 years of age during the measurement year
Data Sources	Hybrid
National Benchmark	2021 Medicaid HMO = 79.3%

	Source: https://www.ncqa.org/hedis/measures/immunizations-for-adolescents/

Measure:	**Primary Care Provider Visit (Children)**
Steward:	Steward: National Committee on Quality Assurance
NQF Endorsed:	No
Description	Percentage of children and adolescents 12 months of age to 19 years of age who had a visit with a primary care practitioner (PCP). Four separate percentages are reported: • Children ages 12 to 24 months of age and 25 months to 6 years of age who had a visit with a PCP during the measurement year. • Children 7 to 11 years of age and adolescents 12 to 19 years of age who had a visit with a PCP during the measurement year or the year prior to the measurement year.
Numerator	• For 12 to 24 months of age and 25 months of age to 6 years of age: One or more visits with a PCP (Ambulatory Visits Value Set) during the measurement year. • For 7 to 11 years of age and 12 to 19 years of age: One or more visits with a PCP (Ambulatory Visits Value Set) during the measurement year or the year prior to the measurement year. Count all children/ adolescents who had an ambulatory or preventive care visit to any PCP.
Denominator	The eligible population
Data Sources	Medicaid claims/encounters data
National Benchmark	2019 Medicaid HMO = 95.1% https://www.ncqa.org/hedis/measures/children-and-adolescents-access-to-primary-care-practitioners-cap/

Measure:	**Child and Adolescent Well-Care Visits (WCV)** ***MassHealth ACO Monitoring Measure**
Steward:	National Committee for Quality Assurance
NQF Endorsed:	No
Description	The percentage of members 3 to 21 years of age who had at least one comprehensive well-care visit with a PCP or an OB/GYN practitioner during the measurement year.
Numerator	At least one comprehensive well-care visit with a PCP or an OB/GYN practitioner during the measurement year. The practitioner does not have to be the practitioner assigned to the adolescent.
Denominator	The eligible population
Data Sources	Medicaid claims/encounters data
National Benchmark	2021 Medicaid HMO = 49.5% Source: https://www.ncqa.org/hedis/measures/child-and-adolescent-well-care-visits/

Measure:	All Cause Inpatient Admissions
Steward:	MassHealth
NQF Endorsed:	No
Description	Rate of all-cause acute hospital admissions (or observation stays).
Numerator	The number of acute inpatient admissions from any cause.
Denominator	The person-time contributed by members in the population of interest during the measurement period.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	All Cause ED Visits
Steward:	MassHealth
NQF Endorsed:	No
Description	Rate of all-cause ED visits for enrollees 3 to 64 years of age.
Numerator	All ED visits by enrollees 3 to 64 years of age on or between January 1 and December 1 of the measurement year.
Denominator	Enrollees 3 to 64 years of age
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	Primary Care Sensitive ED Visits
Steward:	None
NQF Endorsed:	No
Description	Rate of primary care sensitive ED visits for enrollees 3 to 64 years of age.
Numerator	All primary care sensitive ED visits by enrollees 3 to 64 years of age on or between January 1 and December 1 of the measurement year.
Denominator	Person-time contributed by enrollees 3 to 64 years of age.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	Pediatric ED Visits (All-cause)
Steward	None
NQF Endorsed:	No
Description	Rate of all-cause pediatric ED visits for members under 18 years of age.
Numerator	The observed number of all-cause pediatric ED visits for members under 18 years of age.
Denominator	The person-time contributed by members in the population of interest during the measurement period.

Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	**Pediatric Hospitalizations (All-cause)**
Steward:	None
NQF Endorsed:	No
Description	Rate of all-cause hospital admissions (and observation stays) for members under age 18.
Numerator	The observed number of all-cause pediatric hospitalizations for members under 18.
Denominator	The person-time contributed by members in the population of interest during the measurement period.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Chapter 3: Delivery System Reform

Measure:	**Diabetes Screening for People With Schizophrenia or Bipolar Disorder Who Are Using Antipsychotic Medications (SSD)** ***MassHealth BH CP Quality Measure**
Steward:	National Committee on Quality Assurance (#1932)
NQF Endorsed:	Yes
Description	The percentage of patients 18 to 64 years of age with schizophrenia or bipolar disorder who were dispensed an antipsychotic medication and had a diabetes screening test during the measurement year.
Numerator	Among patients 18 to 64 years old with schizophrenia or bipolar disorder, those who were dispensed an antipsychotic medication and had a diabetes screening testing during the measurement year.
Denominator	Patients ages 18 to 64 years of age as of the end of the measurement year (e.g., December 31) with a schizophrenia or bipolar disorder diagnosis and who were prescribed an antipsychotic medication.
Data Sources	Medicaid claims/encounters data
National Benchmark	2021 Medicaid HMO = 79.2% Source: https://www.ncqa.org/hedis/measures/diabetes-and-cardiovascular-disease-screening-and-monitoring-for-people-with-schizophrenia-or-bipolar-disorder/

Measure:	**Physician Visit within 30 Days of Hospital Discharge**
Steward:	None
NQF Endorsed:	No
Description	Percentage of hospitalizations for enrollees 18 to 64 years of age where the member received follow-up within 30 days of hospital discharge.

Numerator	Enrollees 18 to 64 years of age who had a follow-up visit within 30 days of hospital discharge.
Denominator	Enrollees 18 to 64 years of age who were hospitalized.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	**Follow-Up After Emergency Department Visit for Alcohol and Other Drug Abuse or Dependence (FUA-AD and FUA-CH)**
Steward:	National Committee for Quality Assurance (#3488)
NQF Endorsed:	Yes
Description	The percentage of ED visits for members 13 years of age and older with a principal diagnosis of alcohol or other drug (AOD) abuse or dependence and who had a follow-up visit for AOD. Two rates are reported: • The percentage of ED visits for which the member received follow-up within 30 days of the ED visit (31 total days). • The percentage of ED visits for which the member received follow-up within seven days of the ED visit (eight total days).
Numerator	The numerator consists of two rates: • 30-day follow-up: A follow-up visit with any practitioner, with a principal diagnosis of AOD, within 30 days after the ED visit (31 total days). Include visits that occur on the date of the ED visit. • 7-day follow-up: A follow-up visit with any practitioner, with a principal diagnosis of AOD, within seven days after the ED visit (eight total days). Include visits that occur on the date of the ED visit. These rates are stratified by age (13 to 17, 18 and older, total).
Denominator	ED visits with a primary diagnosis of alcohol or other drug abuse or dependence on or between January 1 and December 1 of the measurement year, where the member was 13 years or older on the date of the visit.
Data Sources	Medicaid claims/encounters data
National Benchmark	2021 Medicaid HMO for follow-up within seven days of ED visit= 11% 2021 Medicaid HMO for follow-up within 30 days of ED visit= 15.9% Source: https://www.ncqa.org/hedis/measures/follow-up-after-emergency-department-visit-for-alcohol-and-other-drug-abuse-or-dependence/

Measure:	**Follow-Up After Hospitalization for Mental Illness (FUH)** *** MassHealth ACO Quality Measure**
Steward:	National Committee for Quality Assurance (#0576)
NQF Endorsed:	Yes
Description	The percentage of discharges for members 6 years of age and older who were hospitalized for treatment of selected mental illness or intentional self-harm diagnoses and who had a follow-up visit with a mental health provider. Two rates are reported:

	• The percentage of discharges for which the member received follow-up within 30 days after discharge. • The percentage of discharges for which the member received follow-up within seven days after discharge.
Numerator	• 30-Day Follow-Up: A follow-up visit with a mental health provider within 30 days after discharge. • 7-Day Follow-Up: A follow-up visit with a mental health provider within seven days after discharge
Denominator	Discharges from an acute inpatient setting with a principal diagnosis of mental illness or intentional self-harm on the discharge claim during the first 11 months of the measurement year (i.e., January 1 to December 1) for members 6 years and older.
Data Sources	Medicaid claims/encounters data
National Benchmark	2021 Medicaid HMO for follow-up within seven days post-discharge= 38.4% 2021 Medicaid HMO for follow-up within 30 days post-discharge = 58.7% Source: https://www.ncqa.org/hedis/measures/follow-up-after-hospitalization-for-mental-illness/

Measure:	**Follow-up with CP after Acute or Post-Acute Stay *MassHealth LTSS CP and BH CP Quality Measure**
Steward:	MassHealth
NQF Endorsed:	No
Description	The percentage of discharges from acute or post-acute stays for Long Term Services and Supports Community Partner (LTSS CP) enrollees 3 to 64 years of age or Behavioral Health Community partners (BH CP) enrollees 18 to 64 years of age that were succeeded by a follow-up with the LTSS CP or BH CP within (# to be specified) business days of discharge.
Numerator	Discharges for LTSS CP enrollees 3 to 64 years of age or BH CP enrollees 18 to 64 years of age that were succeeded by a follow-up with the LTSS CP or BH CP within 3 business days of discharge.
Denominator	Discharges for LTSS CP enrollees 3 to 64 years of age or BH CP enrollees 18 to 64 years of age during the measurement year.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	**Follow-up with BH-CP or Provider after ED Visit *MassHealth BH CP Quality Measure**
Steward:	MassHealth
NQF Endorsed:	No
Description	Percentage of ED visits for enrollees 18 to 64 years of age where the member received follow-up within seven days of ED discharge.
Numerator	Enrollees 18 to 64 years of age who received follow-up care from a BH CP or provider after an ED visit.

Denominator	Enrollees 18 to 64 years of age who had an ED visit in the measurement year.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	**Developmental Screening in the First 3 Years of Life *MassHealth ACO quality measure**
Steward:	National Committee for Quality Assurance (#1448)
NQF Endorsed:	No
Description	The percentage of children 1, 2, and 3 years of age who had a developmental screening performed. Three Rates – • Rate 1: Developmental Screening by Child's First Birthday • Rate 2: Developmental Screening by Child's Second Birthday • Rate 3: Developmental Screening by Child's Third Birthday
Numerator	Children who had documentation of a developmental screening (screening for risk of developmental, behavioral, and social delays) using a standardized tool by their first, second, and third birthdays.
Denominator	Children with a visit who turned 1, 2, and 3 years of age.
Data Sources	Hybrid/Medicaid claims/encounters data
National Benchmark	None

Measure:	**Immunizations for Adolescents (IMA)**
Steward:	National Committee on Quality Assurance (#1407)
NQF Endorsed:	Yes
Description	The percentage of adolescents 13 years of age who had the recommended immunizations (meningococcal vaccine and one tetanus, diphtheria toxoids and acellular pertussis vaccine (Tdap) or one tetanus, diphtheria toxoids vaccine (Td) by their 13th birthday.
Numerator	Adolescents 13 years of age who had one dose of meningococcal vaccine and one tetanus, diphtheria toxoids and acellular pertussis vaccine (Tdap) or one tetanus, diphtheria toxoids vaccine (Td) by their 13th birthday.
Denominator	Adolescents who turn 13 years of age during the measurement year.
Data Sources	Hybrid
National Benchmark	2021 Medicaid HMO = 79.3% Source: https://www.ncqa.org/hedis/measures/immunizations-for-adolescents/

Measure:	**Childhood Immunization Status (CIS) *MassHealth ACO quality measure (pediatric ACOs)**
Steward:	National Committee on Quality Assurance (#0038)

NQF Endorsed:	Yes
Description	Percentage of children 2 years of age who had four diphtheria, tetanus and acellular pertussis (DTaP); three polio (IPV); one measles, mumps and rubella (MMR); three haemophilus influenza type B (HiB); three hepatitis B (HepB); one chickenpox (VZV); four pneumococcal conjugate (PCV); one hepatitis A (HepA); two or three rotavirus (RV); and two influenza (flu) vaccines by their second birthday. The measure calculates a rate for each vaccine.
Numerator	Children who received the recommended vaccines by their second birthday.
Denominator	Children who turn 2 years of age during the measurement year.
Data Sources	Hybrid
National Benchmark	2021 Medicaid HMO for Influenza: 47.6% 2021 Medicaid HMO for Combination 10: 35.9% 2021 Medicaid HMO for Combination 2: 70.4% 2021 Medicaid HMO for Combination 2: 63% 2021 Medicaid HMO for Diphtheria, Tetanus, Acellular Pertussis (DTaP/DT): 69.7% 2021 Medicaid HMO for Hepatitis B (HEP B): 84.9% 2021 Medicaid HMO for Haemophilis Influenza Type B (HIB B): 82.6% 2021 Medicaid HMO for Inactivated Polio Virus (IPV): 84.7% 2021 Medicaid HMO for Measles, Mumps, Rubella (MMR): 83.1% 2021 Medicaid HMO for Pneumococcal Conjugate (PCV): 70.7% 2021 Medicaid HMO for Varicella (VZV): 82.9% 2021 Medicaid HMO for Hepatitis A (Hep A): 79.9% 2021 Medicaid HMO for Rotavirus (RV): 68.4% Sources: https://www.ncqa.org/hedis/measures/childhood-immunization-status/; NQF.

Measure:	**Prenatal & Postpartum Care (PPC)/ Timeliness of Prenatal Care * MassHealth ACO Quality Measure**
Steward:	National Committee on Quality Assurance (#1517)
NQF Endorsed:	Measure Retired and Endorsement Removed
Description	The percentage of deliveries of live births between November 6 of the year prior to the measurement year and November 5 of the measurement year. For these women, the measure assesses the following facets of prenatal and postpartum care: Rate 1: Timeliness of Prenatal Care. The percentage of deliveries that received a prenatal care visit as a member of the organization in the first trimester or within 42 days of enrollment in the organization. Rate 2: Postpartum Care. The percentage of deliveries that had a postpartum visit on or between 21 and 56 days after delivery.
Numerator	This measure assesses whether pregnant women had timely prenatal and postpartum care visits. It has two rates, one assessing the timeliness of prenatal visits, and one assessing the timeliness of postpartum visits.

Denominator	The percentage of deliveries of live births between November 6 of the year prior to the measurement year and November 5 of the measurement year.
Data Sources	Hybrid
National Benchmark	2021 Medicaid HMO: 83.5% Source: https://www.ncqa.org/hedis/measures/prenatal-and-postpartum-care-ppc/

Measure:	**Topical Fluoride for Children at Elevated Caries Risk** *** MassHealth ACO quality measure**
Steward:	American Dental Association on behalf of the Dental Quality Alliance (#2528)
NQF Endorsed:	Yes
Description	The percentage of Medicaid beneficiaries, between 6 to 14 years of age, who are at elevated risk of caries who received a topical fluoride application and/or sealants at a dental or oral health service within the measurement year.
Numerator	Medicaid beneficiaries 6 to 14 years of age as of the last day of the measurement year, meeting the above eligibility criteria, meets the above criteria for elevated caries risk, and meets the following criteria: - Received a topical fluoride or a sealant as a dental or oral health service (as defined by the NUCC maintained Provider Taxonomy Codes Value Set) during the measurement year.
Denominator	Medicaid beneficiaries aged 6-14 years old as of the last day of the measurement year, meeting the above eligibility criteria, and meets the following criteria for elevated caries risk: • Has a CDT code identifying elevated caries risk in the measurement year OR • Has a CDT code identifying elevated caries risk in any of the three years prior to the measurement year OR • Has a visit with a CDT code 'D0602' or 'D0603' in the measurement year.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	**Asthma Medication Ratio** *** MassHealth ACO quality measure**
Steward:	National Committee for Quality Assurance (#1800)
NQF Endorsed:	Yes
Description	The percentage of patients 5 to 64 years of age who were identified as having persistent asthma and had a ratio of controller medications to total asthma medications of 0.50 or greater during the measurement year.

Numerator	The number of patients who have a ratio of controller medications to total asthma medications of 0.50 or greater during the measurement year.
Denominator	All patients 5 to 64 years of age as of December 31 of the measurement year who have persistent asthma by meeting at least one of the following criteria during both the measurement year and the year prior to the measurement year: • At least one ED visit with asthma as the principal diagnosis. • At least one acute inpatient encounter with asthma as the principal diagnosis. • At least four outpatient visits or observation visits on different dates of service, with any diagnosis of asthma AND at least two asthma medication dispensing events. The visit type need not be the same for the four visits. • At least four asthma medication dispensing events for any controller medication or reliever medication.
Data Sources	Medicaid claims/encounters
National Benchmark	2021 Medicaid HMO=64.9% Source: https://www.ncqa.org/hedis/measures/medication-management-for-people-with-asthma-and-asthma-medication-ratio/

Measure:	**Initiation and Engagement of Alcohol and Other Drug Dependence Treatment (IET)** *** MassHealth ACO and BH CP Quality Measure**
Steward:	National Committee for Quality Assurance (#0004)
NQF Endorsed:	Yes
Description	The percentage of adolescent and adult patients with a new episode of alcohol or other drug (AOD) dependence who received the following: • Initiation of AOD Treatment: The percentage of patients who initiate treatment through an inpatient AOD admission, outpatient visit, intensive outpatient encounter, or partial hospitalization within 14 days of the diagnosis. • Engagement of AOD Treatment: The percentage of patients who initiated treatment and who had two or more additional services with a diagnosis of AOD within 30 days of the initiation visit.
Numerator	Initiation of AOD Dependence Treatment: Initiation of AOD treatment through an inpatient admission, outpatient visit, intensive outpatient encounter, or partial hospitalization within 14 days of the index episode start date. Engagement of AOD Treatment: Initiation of AOD treatment and two or more inpatient admissions, outpatient visits, intensive outpatient encounters, or partial hospitalizations with any AOD diagnosis within 30 days after the date of the Initiation encounter (inclusive).
Denominator	Patients 13 years of age and older who were diagnosed with a new episode of AOD dependency during the first 10 and ½ months of the measurement year (e.g., January 1-November 15).
Data Sources	MMIS claims/encounter data
National Benchmark	Initiation: 2021 Medicaid HMO = 43.1%

	Engagement: 2016 Medicaid HMO = 28.4% Source: https://www.ncqa.org/hedis/measures/initiation-and-engagement-of-alcohol-and-other-drug-abuse-or-dependence-treatment/

Measure:	**Metabolic Monitoring for Children and Adolescents on Antipsychotics (APM)** *** MassHealth ACO Quality Measure (Pediatric ACOs)**
Steward:	National Committee on Quality Assurance (#2800)
NQF Endorsed:	Yes
Description	The percentage of children and adolescents 1 to 17 years of age who had two or more antipsychotic prescriptions and had metabolic testing.
Numerator	Children and adolescents who received glucose and cholesterol tests during the measurement year.
Denominator	Children and adolescents who had ongoing use of antipsychotic medication (at least two prescriptions).
Data Sources	Medicaid claims/encounters data
National Benchmark	2021 Medicaid HMO = 36.6% Source: https://www.ncqa.org/hedis/measures/metabolic-monitoring-for-children-and-adolescents-on-antipsychotics/

Measure:	**Antidepressant Medication Management (AMM)** *** MassHealth BH CP Quality Measure**
Steward:	National Committee on Quality Assurance (#0105)
NQF Endorsed:	Yes
Description	The percentage of patients 18 years of age and older with a diagnosis of major depression who were treated with antidepressant medication and who remained on an antidepressant medication treatment. Two rates are reported. • Effective Acute Phase Treatment. The percentage of patients who remained on an antidepressant medication for at least 84 days (12 weeks). • Effective Continuation Phase Treatment. The percentage of patients who remained on an antidepressant medication for at least 180 days (six months).
Numerator	Adults 18 years of age and older who were treated with antidepressant medication, had a diagnosis of major depression, and remained on an antidepressant medication treatment.
Denominator	Patients 18 years of age and older with a diagnosis of major depression and who were newly treated with antidepressant medication.
Data Sources	Medicaid claims/encounters data
National Benchmark	Effective Acute Phase Treatment Rate: 2021 Medicaid HMO = 60.8% Effective Continuation Phase Treatment Rate: 2021 Medicaid HMO: 44.1% Source: https://www.ncqa.org/hedis/measures/antidepressant-medication-management/

Measure:	Oral Health Evaluation
Steward:	American Dental Association on behalf of the Dental Quality Alliance (#2517)
NQF Endorsed:	Yes
Description	Percentage of enrolled children under 21 years of age who received a comprehensive or periodic oral evaluation within the reporting year.
Numerator	Unduplicated number of enrolled children under 21 years of age who received a comprehensive or periodic oral evaluation as a dental service.
Denominator	Unduplicated number of enrolled children under 21 years of age.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	Preventive Care and Screening: Screening for Depression and Follow-Up Plan * MassHealth ACO quality measure
Steward:	Centers for Medicare & Medicaid Services (#0418)
NQF Endorsed:	Endorsement Removed
Description	Percentage of patients 12 years of age and older screened for depression on the date of the encounter or 14 days prior to the date of the encounter using an age-appropriate standardized depression screening tool AND, if positive, a follow-up plan is documented on the date of the eligible encounter.
Numerator	Patients screened for depression on the date of the encounter or up to 14 days prior to the date of the encounter using an age-appropriate standardized tool AND, if positive, a follow-up plan is documented on the date of the eligible encounter.
Denominator	All patients 12 years of age and older at the beginning of the measurement period with at least one eligible encounter during the measurement period
Data Sources	Hybrid
National Benchmark	None

Measure	Enrollment in ACO Care Management Programs
Steward:	None
NQF Endorsed:	No
Description	The percentage of ACO enrollees in care management programs.
Numerator	The number of ACO enrollees who are receiving ACO care management program services.
Denominator	The number of ACO enrollees.
Data Sources	Claims and encounters
National Benchmark	None

Measure	Prevalence of ACO Primary Care Practices by Clinical Tier
Steward:	None
NQF Endorsed:	No
Description	The percentage of ACO primary care practice sites in clinical Tiers 1, 2, and 3 of the primary care sub-capitation program.
Numerator	The number of ACO primary care practice sites in clinical Tiers 1, 2, and 3 of the primary care sub-capitation program.
Denominator	The number of primary care practice sites in the sub-capitation program.
Data Sources	ACO program data
National Benchmark	None

Measure:	Continuity of Primary Care
Steward:	None
NQF Endorsed:	No
Description	A ratio of the number of visits with a member's attributed primary care practice site to the total number of visits with primary care providers.
Numerator	Number of visits with a member's attributed primary care practice site.
Denominator	The eligible population.
Data Sources	Claims and encounters
National Benchmark	None

Measure:	Health Related Social Needs Screening * MassHealth ACO Monitoring Measure
Steward:	MassHealth
NQF Endorsed:	No
Description	Percentage of members who were screened for health-related social needs in the measurement year.
Numerator	Specification pending
Denominator	Specification pending
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	Annual Primary Care Visit * MassHealth CP Quality Measure
Steward:	MassHealth
NQF Endorsed:	No
Description	Percentage of enrollees 18 to 64 years of age who had an annual primary care visit in the measurement year.

Numerator	Number of enrollees who had at least one primary care visit during the measurement year.
Denominator	Eligible population.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	**Treatment Plan Completion (BH CP)** *** MassHealth BH CP Quality Measure**
Steward:	MassHealth
NQF Endorsed:	No
Description	Percentage of BH CP enrollees 18 to 64 years of age who completed a treatment plan within the measurement year.
Numerator	Enrollees 18 to 64 years of age who completed a treatment plan.
Denominator	Enrollees 18 to 64 years of age.
Data Sources	Medicaid claims/encounters, analytics vendor extract
National Benchmark	None

Measure:	**Care Plan Completion (LTSS CP)** *** MassHealth LTSS CP Quality Measure**
Steward:	MassHealth
NQF Endorsed:	No
Description	Percentage of LTSS CP enrollees 3 to 64 years of age who completed a care plan within the measurement year.
Numerator	Enrollees 3 to 64 years of age who completed a care plan.
Denominator	Enrollees 3 to 64 years of age.
Data Sources	Medicaid claims/encounters, analytics vendor extract
National Benchmark	None

Measure:	**Oral Health Evaluation (LTSS CP)** *** MassHealth LTSS CP Quality Measure**
Steward:	American Dental Association on behalf of the Dental Quality Alliance (#2517)
NQF Endorsed:	Yes
Description	Percentage of LTSS CP enrollees 3 to 64 years of age who received a comprehensive or periodic oral evaluation within the reporting year.
Numerator	Unduplicated number of LTSS CP enrollees 3 to 64 years of age who received a comprehensive or periodic oral evaluation as a dental service.
Denominator	LTSS CP enrollees 3 to 64 years of age.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	Post-acute Care Utilization (Adult and Pediatric)
Steward:	None
NQF Endorsed:	No
Description	Rate of post-acute care utilization overall and by type for members in MCEs, ACOs, and MCOs.
Numerator	• Number of discharges where the person used any post-acute care service (inpatient rehab, nursing facility, or home care) in the 14 days after the discharge date. Include utilization on the discharge date and count it as day 0 (so 15 total days from 0-14). • Number of discharges where the person used any institutional post-acute care service (inpatient rehab or nursing facility) in the 14 days after the discharge date. Include utilization on the discharge date and count it as day 0 (so 15 total days from 0-14). • Number of discharges where the person used any home health service in the 14 days after the discharge date. Include utilization on the discharge date and count it as day 0 (so 15 total days from 0-14).
Denominator	The number of eligible index hospital stays (discharges) during the study period (between January 1 and December 17).
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	Primary Care Utilization
Steward:	None
NQF Endorsed:	No
Description	Rate of members 0 to 64 years of age who utilized primary care services.
Numerator	Total number of 0 to 64 years of age who utilized primary care services.
Denominator	Person-time contributed among members 0 to 64 years of age.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	Ambulatory Care Utilization
Steward:	None
NQF Endorsed:	No
Description	Rate of ambulatory care visits among members 0 to 64 years of age.
Numerator	Total number of ambulatory care visits among members 0 to 64 years of age.
Denominator	Person-time contributed among members 0 to 64 years of age.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	Pharmacy Utilization
Steward:	None
NQF Endorsed:	No
Description	Number of medications used among members 0 to 64 years of age.
Numerator	Number of unique medications used among members 0 to 64 years of age.
Denominator	Members 0 to 64 years of age.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	Imaging for Low Back Pain (LBP)
Steward:	National Committee on Quality Assurance
NQF Endorsed:	No
Description	Adults 18 to 50 years of age with a primary diagnosis of low back pain who did not have an imaging study (plain X-ray, MRI, or CT scan) within 28 days of the diagnosis.
Numerator	The number of patients without an order for or report on an imaging study during the 28 days after pain onset.
Denominator	Adults 18 to 50 years of age with a primary diagnosis of low back pain.
Data Sources	Medicaid claims/encounters data
National Benchmark	2021 Medicaid HMO = 74.5% Source: https://www.ncqa.org/hedis/measures/use-of-imaging-studies-for-low-back-pain/

Measure:	Inpatient Utilization—General Hospital/Acute Care (IPU)
Steward:	None
NQF Endorsed:	No
Description	Rate of inpatient stays among members 0 to 64 years of age.
Numerator	Total number of inpatient stays.
Denominator	Person-time contributed by members 0 to 64 years of age.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	Unnecessary C-Section
Steward:	Joint Commission National Quality Measures (#PC-02)
NQF Endorsed:	No
Description	Nulliparous women with a term, singleton baby in a vertex position delivered by cesarean birth.
Numerator	Patients with cesarean births.

Denominator	Nulliparous patients delivered of a live-term singleton newborn in vertex presentation.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	**Plan All-Cause Readmissions (PCR)**
Steward:	National Committee for Quality Assurance (#1768)
NQF Endorsed:	Endorsement Removed
Description	The rate of adult acute inpatient and observation stays that were followed by an unplanned acute readmission for any diagnosis within 30 days after discharge.
Numerator	At least one acute unplanned readmission for any diagnosis within 30 days of the date of discharge from the Index Hospital Stay, that is on or between the second day of the measurement year and the end of the measurement year.
Denominator	Patients 18 years of age and older with a discharge from an acute inpatient stay (Index Hospital Stay) on or between January 1 and December 1 of the measurement year.
Data Sources	Medicaid claims/encounters data
National Benchmark	2021 Medicaid HMO = 10% Source: https://www.ncqa.org/hedis/measures/plan-all-cause-readmissions/

Measure:	**Acute Unplanned Hospital Admissions**
Steward:	Adapted from Risk-Standardized Acute Admission Rates for Patients with Diabetes (NQF#2887)
NQF Endorsed:	Endorsement removed
Description	The rate of acute unplanned admissions. Calculated separately for adult and pediatric populations.
Numerator	The number of acute unplanned hospital admissions.
Denominator	Person-time contributed by the eligible population.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	**Hospital Admissions for Ambulatory Care Sensitive Conditions (Chronic ACSCs)**
Steward:	AHRQ
NQF Endorsed:	No
Description	Rate of admissions for members with chronic ACSCs.
Numerator	The number of acute unplanned hospital admissions for adults with chronic ACSCs (or observation stays).

Denominator	The person-time contributed by members in the population of interest during the measurement period.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	**Hospital Admissions for Ambulatory Care Sensitive Conditions (Acute ACSCs)**
Steward:	AHRQ
NQF Endorsed:	No
Description	Rate of admissions for members with acute ACSCs.
Numerator	The outcome measure is the observed number of acute unplanned hospital admissions for adults with acute ACSCs (or observation stays) per 1,000-member months at risk for admissions.
Denominator	The person-time contributed by members in the population of interest during the measurement period.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	**Neonatal Intensive Care Unit Utilization**
Steward:	None
NQF Endorsed:	No
Description	Rate of NICU hospitalizations among live births.
Numerator	The observed number of NICU hospitalizations.
Denominator	The number of live births.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	**ED Boarding of Members with BH Conditions**
Steward:	None
NQF Endorsed:	No
Description	The rate of ED visits resulting in boarding among members with BH conditions.
Numerator	The number of ED visits for members with a BH condition with an arrival date and discharge date separated by one or more days (a minimum duration in the ED of 24 hours).
Denominator	The person-time contributed by members of the population of interest during the measurement period.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	**Emergency Department Visits for Individuals with Mental Illness, Addiction, or Co-occurring Conditions** *** MassHealth ACO Quality Measure**
Steward:	MassHealth
NQF Endorsed:	No
Description	Rate of ED visits for members 18 to 64 years of age identified with a diagnosis of SMI and/or substance addiction.
Numerator	Number of emergency department visits
Denominator	Enrollees 18 to 64 years of age as of December 31 of the measurement year with a diagnosis of serious mental illness and/or substance use disorder
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	**Maternal Morbidity**
Steward:	MassHealth
NQF Endorsed:	No
Description	Specification pending.

Measure:	**Controlling High Blood Pressure (CBP-AD)** *** MassHealth monitoring measure**
Steward:	National Committee for Quality Assurance (#0018)
NQF Endorsed:	Yes
Description	The percentage of adults 18 to 85 years of age who had a diagnosis of hypertension (HTN) and whose blood pressure was adequately controlled (<140/90 mm Hg) during the measurement year.
Numerator	Patients whose most recent blood pressure level was <140/90 mm Hg during the measurement year.
Denominator	Patients 18 to 85 years of age who had at least two visits on different dates of service with a diagnosis of hypertension during the measurement year or the year prior to the measurement year.
Data Sources	Hybrid
National Benchmark	2021 Medicaid HMO = 58.6% Source: https://www.ncqa.org/hedis/measures/controlling-high-blood-pressure/

Measure:	**Comprehensive Diabetes Care: Hemoglobin A1c (HbA1c) Poor Control (>9.0%)** *** MassHealth ACO Quality Measure**
Steward:	National Committee for Quality Assurance (#0059)
NQF Endorsed:	Endorsement Removed

Description	The percentage of patients 18 to 75 years of age with diabetes (type 1 and type 2) whose most recent HbA1c level is >9.0% during the measurement year.
Numerator	Patients whose most recent HbA1c level is greater than 9.0%, is missing a result, or for whom an HbA1c test was not done during the measurement year.
Denominator	Patients 18 to 75 years of age by the end of the measurement year who had a diagnosis of diabetes (type 1 and type 2) during the measurement year or the year prior to the measurement year.
Data Sources	Hybrid
National Benchmark	2021 Medicaid HMO = 42.3% Source: https://www.ncqa.org/hedis/measures/comprehensive-diabetes-care/ * Lower rates signify better performance

Measure:	**Total Cost of Care (All Covered Services)**
Steward:	None
NQF Endorsed:	No
Description	Costs of all MassHealth covered services.
Numerator	Costs of all MassHealth covered services (excludes cosmetic surgery, treatment for infertility, experimental treatment, personal comfort items, non-covered laboratory services, and other services specified as not covered by MassHealth).
Denominator	The person-time contributed by members in the population of interest during the measurement period.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	**Expenditures by Service Category**
Steward:	None
NQF Endorsed:	No
Description	Costs for specific categories (e.g., services included in ACO medical risk corridors) and sub-categories of services including inpatient (e.g., non-maternity physical health, maternity, BH), ED visits, outpatient non-BH (lab and radiology, non-BH outpatient hospital), outpatient BH (e.g., Emergency Services Program, diversionary services), professional services, pharmacy, home health, durable medical equipment, emergency transportation, long-term care, other medical services, and services excluded from the TCOC (e.g., applied behavioral analysis, Children's Behavioral Health Initiative, LTSS).
Numerator	Costs for specific categories and sub-categories of services (calculated separately for each category of service).
Denominator	The person-time contributed by members in the population of interest during the measurement period.

Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	**Shared Savings and Shared Losses**
Steward:	None
NQF Endorsed:	No
Description	The separate and combined sum of shared savings and losses accrued by: 1. MassHealth 2. ACOs 3. both MassHealth and the ACOs
Numerator	Not applicable
Denominator	Not applicable
Data Sources	Financial reconciliation reports
National Benchmark	None

Chapter 4: Behavioral Health

Measure:	**Emergency Department Visits for Individuals with Mental Illness, Addiction, or Co-occurring Conditions Stratified by Age (6-17, 18-64) * MassHealth ACO Quality Measure**
Steward:	MassHealth
NQF Endorsed:	No
Description	Rate of ED visits for members 18 to 64 years of age identified with a diagnosis of SMI and/or substance addiction.
Numerator	Number of emergency department visits
Denominator	Enrollees 18 to 64 years of age as of December 31 of the measurement year with a diagnosis of serious mental illness and/or substance use disorder
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	**ED Boarding (ED LOS >24 hours) for Members with BH Conditions**
Steward:	None
NQF Endorsed:	No
Description	The percentage of ED visits resulting in boarding among members with BH conditions.
Numerator	The number of ED visits for members with a BH condition with an arrival date and discharge date separated by one or more days (a minimum duration in the ED of 24 hours).
Denominator	The person-time contributed by members of the population of interest during the measurement period.

Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	**Follow-Up After Emergency Department Visit for Mental Illness**
Steward:	National Committee for Quality Assurance (#3489)
NQF Endorsed:	Yes
Description	The percentage of ED visits for members 6 years of age and older with a principal diagnosis of mental illness or intentional self-harm, who had a follow-up visit for mental illness. Two rates are reported: • The percentage of ED visits for which the member received follow-up within 30 days of the ED visit (31 total days). • The percentage of ED visits for which the member received follow-up within seven days of the ED visit (eight total days).
Numerator	The numerator consists of two rates: • 30-day follow-up: The percentage of ED visits for which the member received follow-up within 30 days of the ED visit (31 total days). • 7-day follow-up: The percentage of ED visits for which the member received follow-up within seven days of the ED visit (eight total days).
Denominator	ED visits for members 6 years of age and older with a principal diagnosis of mental illness or intentional self-harm on or between January 1 and December 1 of the measurement year.
Data Sources	Medicaid claims/encounters data
National Benchmark	2021 Medicaid HMO Follow-up within seven days = 40.1% 2021 Medicaid HMO Follow-up within 30 days = 53.4% Source: https://www.ncqa.org/hedis/measures/follow-up-after-emergency-department-visit-for-mental-illness/

Measure:	**Total Cost of Care (All Covered Services) Broken Down by Individuals with Any SUD-related, OUD, or SMI/SED Diagnoses**
Steward:	None
NQF Endorsed:	No
Description	Costs of all MassHealth covered services.
Numerator	Costs of all MassHealth covered services (excludes cosmetic surgery, treatment for infertility, experimental treatment, personal comfort items, non-covered laboratory services, and other services specified as not covered by MassHealth).
Denominator	The person-time contributed by members in the population of interest during the measurement period.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	**Initiation and Engagement of Alcohol and Other Drug Dependence Treatment (IET)** *** MassHealth ACO and BH CP Quality Measure**
Steward:	National Committee for Quality Assurance (#0004)
NQF Endorsed:	Yes
Description	The percentage of adolescent and adult patients with a new episode of alcohol or other drug (AOD) dependence who received the following: • Initiation of AOD Treatment: The percentage of patients who initiate treatment through an inpatient AOD admission, outpatient visit, intensive outpatient encounter, or partial hospitalization within 14 days of the diagnosis. • Engagement of AOD Treatment: The percentage of patients who initiated treatment and who had two or more additional services with a diagnosis of AOD within 30 days of the initiation visit.
Numerator	• Initiation of AOD Dependence Treatment: Initiation of AOD treatment through an inpatient admission, outpatient visit, intensive outpatient encounter, or partial hospitalization within 14 days of the index episode start date. • Engagement of AOD Treatment: Initiation of AOD treatment and two or more inpatient admissions, outpatient visits, intensive outpatient encounters, or partial hospitalizations with any AOD diagnosis within 30 days after the date of the Initiation encounter (inclusive).
Denominator	Patients aged 13 years of age and older who were diagnosed with a new episode of AOD dependency during the first 10 and ½ months of the measurement year (e.g., January 1-November 15).
Data Sources	MMIS claims/encounter data
National Benchmark	Initiation: 2021 Medicaid HMO = 43.1% Engagement: 2016 Medicaid HMO = 28.4% Source: https://www.ncqa.org/hedis/measures/initiation-and-engagement-of-alcohol-and-other-drug-abuse-or-dependence-treatment/

Measure:	**Continuity of Pharmacotherapy for Opioid Use Disorder**
Steward:	University of Southern California (#3175)
NQF Endorsed:	Yes
Description	Percentage of adults of at least 18 years of age with pharmacotherapy for opioid use disorder (OUD) who have at least 180 days of continuous treatment.
Numerator	Individuals in the denominator who have at least 180 days of continuous pharmacotherapy with a medication prescribed for OUD without a gap of more than seven days.
Denominator	Individuals at least 18 years of age who had a diagnosis of OUD and at least one claim for an OUD medication.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	Follow-Up After Emergency Department Visit for Mental Illness or Alcohol and Other Drug Abuse or Dependence
Steward:	National Committee for Quality Assurance (#2605)
NQF Endorsed:	Endorsement Removed
Description	The percentage of discharges for patients 18 years of age and older who had a visit to the ED with a primary diagnosis of mental health or alcohol or other drug dependence during the measurement year AND who had a follow-up visit with any provider with a corresponding primary diagnosis of mental health or alcohol or other drug dependence within 7- and 30-days of discharge. Four rates are reported: • The percentage of ED visits for mental health for which the patient received follow-up within seven days of discharge. • The percentage of ED visits for mental health for which the patient received follow-up within 30 days of discharge. • The percentage of ED visits for alcohol or other drug dependence for which the patient received follow-up within seven days of discharge. • The percentage of ED visits for alcohol or other drug dependence for which the patient received follow-up within 30 days of discharge
Numerator	The numerator for each denominator population consists of two rates: Mental Health • Rate 1: An outpatient visit, intensive outpatient encounter, or partial hospitalization with any provider with a primary diagnosis of mental health within seven days after ED discharge. • Rate 2: An outpatient visit, intensive outpatient encounter, or partial hospitalization with any provider with a primary diagnosis of mental health within 30 days after ED discharge. Alcohol or Other Drug Dependence • Rate 1: An outpatient visit, intensive outpatient encounter, or partial hospitalization with any provider with a primary diagnosis of alcohol or other drug dependence within seven days after ED discharge. • Rate 2: An outpatient visit, intensive outpatient encounter, or partial hospitalization with any provider with a primary diagnosis of alcohol or other drug dependence within 30 days after ED discharge.
Denominator	Patients who were treated and discharged from an ED with a primary diagnosis of mental health or alcohol or other drug dependence on or between January 1 and December 1 of the measurement year.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	Emergency Department Use for any SUD-related Diagnosis and OUD Diagnosis
Steward:	None
NQF Endorsed:	No

Description	ED visits for SUD-related diagnoses and for OUD/1,000 member months for SUD-related and OUD diagnoses.
Numerator	Total number of ED visits for SUD-related and OUD diagnoses.
Denominator	1,000-member months among members with SUD/OUD diagnosis.
Data Sources	MMIS claims/encounter data
National Benchmark	None

Measure:	**Outpatient SUD Services Usage per Month**
Steward:	None
NQF Endorsed:	No
Description	Percentage of members with any SUD/OUD diagnosis who used the following per month: • Outpatient SUD services • Intensive outpatient services • Medication-assisted treatment for SUD • Residential treatment (ASAM Level 3.1), including average length of stay • ASAM level 3.3 • Clinical stabilization services (ASAM Level 3.5) • Acute Treatment Services (ASAM Level 3.7) • Inpatient Withdrawal Management • Outpatient detox • Recovery Coach • Recovery Support Navigator
Numerator	Total number of members with any SUD/OUD diagnosis who used any of the listed services per month.
Denominator	Total number of members with SUD/OUD diagnosis.
Data Sources	MMIS claims/encounter data, BSAS program data (if available)
National Benchmark	None

Measure:	**Use of Opioids at High Dosage in Persons Without Cancer**
Steward:	Pharmacy Quality Alliance (#2940)
NQF Endorsed:	Yes
Description	The proportion (XX out of 1,000) of individuals without cancer receiving prescriptions for opioids with a daily dosage greater than 120mg morphine equivalent dose (MED) for 90 consecutive days or longer, AND who received opioid prescriptions from four or more prescribers AND four or more pharmacies.
Numerator	Any member in the denominator with opioid prescription claims where the MED is greater than 120mg for 90 consecutive days or longer AND who received opioid prescriptions from four or more prescribers AND four or more pharmacies.

Denominator	Any member with two or more prescription claims for opioids filled on at least two separate days, for which the sum of the days' supply is greater than or equal to 15.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	**Inpatient Admissions for any SUD-related Diagnosis and OUD Diagnosis**
Steward:	None
NQF Endorsed:	No
Description	Inpatient admissions for SUD and OUD/1,000-member months for SUD-related and OUD diagnoses.
Numerator	Total number of inpatient admissions for SUD-related and OUD diagnoses.
Denominator	1,000-member months among members with SUD/OUD diagnosis.
Data Sources	MMIS claims/encounter data
National Benchmark	None

Measure:	**Plan All-Cause Readmissions (PCR) for Members with a SUD/SMI/SED Diagnosis**
Steward:	National Committee for Quality Assurance (#1768)
NQF Endorsed:	Endorsement Removed
Description	The rate of adult acute inpatient and observation stays that were followed by an unplanned acute readmission for any diagnosis within 30 days after discharge.
Numerator	At least one acute unplanned readmission for any diagnosis within 30 days of the date of discharge from the Index Hospital Stay, that is on or between the second day of the measurement year and the end of the measurement year.
Denominator	Patients 18 years of age and older with a discharge from an acute inpatient stay (Index Hospital Stay) on or between January 1 and December 1 of the measurement year.
Data Sources	Medicaid claims/encounters data
National Benchmark	2021 Medicaid HMO = 10% Source: https://www.ncqa.org/hedis/measures/plan-all-cause-readmissions/

Measure:	**Healthcare Utilization**
Steward:	None
NQF Endorsed:	No
Description	Healthcare service utilization among members with SUD diagnosis.
Numerator	Total number of members with SUD and OUD diagnoses who used healthcare services used among members with SUD and OUD diagnoses:

	• Outpatient SUD Professional visits • Inpatient visits • Ambulatory care visits • Other
Denominator	1,000 member months among members with SUD/OUD diagnosis.
Data Sources	MMIS claims/encounter data
National Benchmark	None

Measure:	**Medication for Addiction Treatment (MAT) Prescribers**
Steward:	None
NQF Endorsed:	No
Description	Rate of MAT prescribers per # of members with OUD.
Numerator	Providers who prescribe MAT.
Denominator	N/A
Data Sources	MMIS claims/encounter data
National Benchmark	None

Measure:	**Nonfatal Overdoses, Overall and Opioid-Related**
Steward:	None
NQF Endorsed:	No
Description	Percentage of members who had a non-fatal overdose.
Numerator	Total number of all-cause and opioid-related nonfatal overdoses in MassHealth members.
Denominator	Total number of MassHealth members.
Data Sources	MMIS claims/encounter data, Ch. 55 Public Health Dataset
National Benchmark	None

Measure:	**Overdose Deaths, Overall and Opioid-Related**
Steward:	None
NQF Endorsed:	No
Description	Percentage of members who had a fatal overdose.
Numerator	Total number of all-cause and opioid-related fatal overdoses in MassHealth members.
Denominator	Total number of MassHealth members.
Data Sources	MMIS claims/encounter data, MA death records
National Benchmark	None

Measure:	**Follow-Up After Hospitalization for Mental Illness (FUH) broken down by age (6-17, 18-64)** *** MassHealth ACO Quality Measure**
Steward:	National Committee for Quality Assurance (#0576)
NQF Endorsed:	Yes
Description	The percentage of discharges for members 6 years of age and older who were hospitalized for treatment of selected mental illness or intentional self-harm diagnoses and who had a follow-up visit with a mental health provider. Two rates are reported: • The percentage of discharges for which the member received follow-up within 30 days after discharge. • The percentage of discharges for which the member received follow-up within seven days after discharge.
Numerator	• 30-Day Follow-Up: A follow-up visit with a mental health provider within 30 days after discharge. • 7-Day Follow-Up: A follow-up visit with a mental health provider within seven days after discharge
Denominator	Discharges from an acute inpatient setting with a principal diagnosis of mental illness or intentional self-harm on the discharge claim during the first 11 months of the measurement year (i.e., January 1 to December 1) for members 6 years and older.
Data Sources	Medicaid claims/encounters data
National Benchmark	2021 Medicaid HMO for follow-up within seven days post-discharge= 38.4% 2021 Medicaid HMO for follow-up within 30 days post-discharge = 58.7% Source: https://www.ncqa.org/hedis/measures/follow-up-after-hospitalization-for-mental-illness/

Chapter 5: Safety Net Care Pool

Measure:	**Developmental Screening in the First 3 Years of Life** ***MassHealth ACO Quality Measure**
Steward:	National Committee for Quality Assurance (#1448)
NQF Endorsed:	No
Description	The percentage of children 1, 2, and 3 years of age who had a developmental screening performed. Three Rates – • Rate 1: Developmental Screening by Child's First Birthday • Rate 2: Developmental Screening by Child's Second Birthday • Rate 3: Developmental Screening by Child's Third Birthday
Numerator	Children who had documentation of a developmental screening (screening for risk of developmental, behavioral, and social delays) using a standardized tool by their first, second, and third birthdays.
Denominator	Children with a visit who turned 1, 2, and 3 years of age.

Data Sources	Hybrid/Medicaid claims/encounters data
National Benchmark	None

Measure:	**Immunizations for Adolescents (IMA)**
Steward:	National Committee on Quality Assurance (#1407)
NQF Endorsed:	Yes
Description	The percentage of adolescents 13 years of age who had the recommended immunizations (meningococcal vaccine and one tetanus, diphtheria toxoids and acellular pertussis vaccine (Tdap) or one tetanus, diphtheria toxoids vaccine (Td) by their 13th birthday.
Numerator	Adolescents 13 years of age who had one dose of meningococcal vaccine and one tetanus, diphtheria toxoids and acellular pertussis vaccine (Tdap) or one tetanus, diphtheria toxoids vaccine (Td) by their 13th birthday.
Denominator	Adolescents who turn 13 years of age during the measurement year.
Data Sources	Hybrid
National Benchmark	2021 Medicaid HMO = 79.3% Source: https://www.ncqa.org/hedis/measures/immunizations-for-adolescents/

Measure:	**Prenatal & Postpartum Care (PPC)/ Timeliness of Prenatal Care *MassHealth ACO Quality Measure**
Steward:	National Committee on Quality Assurance (#1517)
NQF Endorsed:	Measure Retired and Endorsement Removed
Description	The percentage of deliveries of live births between November 6 of the year prior to the measurement year and November 5 of the measurement year. For these women, the measure assesses the following facets of prenatal and postpartum care: • Rate 1: Timeliness of Prenatal Care. The percentage of deliveries that received a prenatal care visit as a member of the organization in the first trimester or within 42 days of enrollment in the organization. • Rate 2: Postpartum Care. The percentage of deliveries that had a postpartum visit on or between 21 and 56 days after delivery.
Numerator	This measure assesses whether pregnant women had timely prenatal and postpartum care visits. It has two rates, one assessing the timeliness of prenatal visits, and one assessing the timeliness of postpartum visits.
Denominator	The percentage of deliveries of live births between November 6 of the year prior to the measurement year and November 5 of the measurement year.
Data Sources	Hybrid
National Benchmark	2021 Medicaid HMO: 83.5% Source: https://www.ncqa.org/hedis/measures/prenatal-and-postpartum-care-ppc/

Measure:	**Preventive Care and Screening: Screening for Depression and Follow-Up Plan** ***MassHealth ACO Quality Measure**
Steward:	Centers for Medicare & Medicaid Services (#0418)
NQF Endorsed:	Endorsement Removed
Description	Percentage of patients aged 12 years and older screened for depression on the date of the encounter or 14 days prior to the date of the encounter using an age-appropriate standardized depression screening tool AND, if positive, a follow-up plan is documented on the date of the eligible encounter.
Numerator	Patients screened for depression on the date of the encounter or up to 14 days prior to the date of the encounter using an age-appropriate standardized tool AND, if positive, a follow-up plan is documented on the date of the eligible encounter.
Denominator	All patients 12 years of age and older at the beginning of the measurement period with at least one eligible encounter during the measurement period.
Data Sources	Hybrid
National Benchmark	None

Measure:	**Health-Related Social Needs Screening** ***MassHealth ACO Quality Measure**
Steward:	MassHealth
NQF Endorsed:	No
Description	Percentage of members who were screened for health-related social needs in the measurement year.
Numerator	Specification pending
Denominator	Specification pending
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	**Emergency Department Visits for Individuals with Mental Illness, Addiction, or Co-occurring Conditions** ***MassHealth ACO Quality Measure**
Steward:	MassHealth
NQF Endorsed:	No
Description	Rate of ED visits for members 18 to 64 years of age identified with a diagnosis of SMI and/or substance addiction.
Numerator	Number of emergency department visits
Denominator	Enrollees 18 to 64 years of age as of December 31 of the measurement year with a diagnosis of serious mental illness and/or substance use disorder
Data Sources	Medicaid claims/encounters data

National Benchmark	None

Measure:	**Follow-Up After Hospitalization for Mental Illness (FUH)** ***MassHealth ACO Quality Measure**
Steward:	National Committee for Quality Assurance (#0576)
NQF Endorsed:	Yes
Description	The percentage of discharges for members 6 years of age and older who were hospitalized for treatment of selected mental illness or intentional self-harm diagnoses and who had a follow-up visit with a mental health provider. Two rates are reported: • Rate 1: The percentage of discharges for which the member received follow-up within 30 days after discharge. • Rate 2: The percentage of discharges for which the member received follow-up within seven days after discharge.
Numerator	30-Day Follow-Up: A follow-up visit with a mental health provider within 30 days after discharge. 7-Day Follow-Up: A follow-up visit with a mental health provider within seven days after discharge.
Denominator	Discharges from an acute inpatient setting with a principal diagnosis of mental illness or intentional self-harm on the discharge claim during the first 11 months of the measurement year (i.e., January 1 to December 1) for members 6 years and older.
Data Sources	Medicaid claims/encounters data
National Benchmark	2021 Medicaid HMO for follow-up within seven days post-discharge= 38.4% 2021 Medicaid HMO for follow-up within 30 days post-discharge = 58.7% Source: https://www.ncqa.org/hedis/measures/follow-up-after-hospitalization-for-mental-illness/

Measure:	**Controlling High Blood Pressure (CBP-AD)** ***MassHealth Monitoring Measure**
Steward:	National Committee for Quality Assurance (#0018)
NQF Endorsed:	Yes
Description	The percentage of adults 18 to 85 years of age who had a diagnosis of hypertension (HTN) and whose blood pressure was adequately controlled (<140/90 mm Hg) during the measurement year.
Numerator	Patients whose most recent blood pressure level was <140/90 mm Hg during the measurement year.
Denominator	Patients 18 to 85 years of age who had at least two visits on different dates of service with a diagnosis of hypertension during the measurement year or the year prior to the measurement year.
Data Sources	Hybrid
National Benchmark	2021 Medicaid HMO = 58.6%

	Source: https://www.ncqa.org/hedis/measures/controlling-high-blood-pressure/

Measure:	**Comprehensive Diabetes Care: Hemoglobin A1c (HbA1c) Poor Control (>9.0%)** *** MassHealth ACO Quality Measure**
Steward:	National Committee for Quality Assurance (#0059)
NQF Endorsed:	Endorsement Removed
Description	The percentage of patients 18 to 75 years of age with diabetes (type 1 and type 2) whose most recent HbA1c level is >9.0% during the measurement year
Numerator	Patients whose most recent HbA1c level is greater than 9.0% or is missing a result, or for whom an HbA1c test was not done during the measurement year.
Denominator	Patients 18-75 years of age by the end of the measurement year who had a diagnosis of diabetes (type 1 and type 2) during the measurement year or the year prior to the measurement year.
Data Sources	Hybrid
National Benchmark	2021 Medicaid HMO = 42.3% Source: https://www.ncqa.org/hedis/measures/comprehensive-diabetes-care/ * Lower rates signify better performance

Measure:	**Asthma Medication Ratio** ***MassHealth ACO Quality Measure**
Steward:	National Committee for Quality Assurance (#1800)
NQF Endorsed:	Yes
Description	The percentage of patients 5 to 64 years of age who were identified as having persistent asthma and had a ratio of controller medications to total asthma medications of 0.50 or greater during the measurement year.
Numerator	The number of patients who have a ratio of controller medications to total asthma medications of 0.50 or greater during the measurement year.
Denominator	All patients 5 to 64 years of age as of December 31 of the measurement year who have persistent asthma by meeting at least one of the following criteria during both the measurement year and the year prior to the measurement year: • At least one ED visit with asthma as the principal diagnosis. • At least one acute inpatient encounter with asthma as the principal diagnosis. • At least four outpatient visits or observation visits on different dates of service, with any diagnosis of asthma AND at least two asthma medication dispensing events. The visit type need not be the same for the four visits. • At least four asthma medication dispensing events for any controller medication or reliever medication.

Data Sources	Medicaid claims/encounters
National Benchmark	2021 Medicaid HMO=64.9% Source: https://www.ncqa.org/hedis/measures/medication-management-for-people-with-asthma-and-asthma-medication-ratio/

Measure:	**Initiation and Engagement of Alcohol and Other Drug Dependence Treatment (IET * MassHealth ACO and BH CP Quality Measure**
Steward:	National Committee for Quality Assurance (#0004)
NQF Endorsed:	Yes
Description	The percentage of adolescent and adult patients with a new episode of alcohol or other drug (AOD) dependence who received the following. • Initiation of AOD Treatment: The percentage of patients who initiate treatment through an inpatient AOD admission, outpatient visit, intensive outpatient encounter, or partial hospitalization within 14 days of the diagnosis. • Engagement of AOD Treatment: The percentage of patients who initiated treatment and who had two or more additional services with a diagnosis of AOD within 30 days of the initiation visit.
Numerator	• Initiation of AOD Dependence Treatment: Initiation of AOD treatment through an inpatient admission, outpatient visit, intensive outpatient encounter, or partial hospitalization within 14 days of the index episode start date. • Engagement of AOD Treatment: Initiation of AOD treatment and two or more inpatient admissions, outpatient visits, intensive outpatient encounters, or partial hospitalizations with any AOD diagnosis within 30 days after the date of the initiation encounter (inclusive).
Denominator	Patients 13 years of age and older who were diagnosed with a new episode of AOD dependency during the first 10 and ½ months of the measurement year (e.g., January 1-November 15).
Data Sources	MMIS claims/encounter data
National Benchmark	Initiation: 2021 Medicaid HMO = 43.1% Engagement: 2016 Medicaid HMO = 28.4% Source: https://www.ncqa.org/hedis/measures/initiation-and-engagement-of-alcohol-and-other-drug-abuse-or-dependence-treatment/

Measure:	**Childhood Immunization Status (CIS) *MassHealth ACO Quality Measure (Pediatric ACOs)**
Steward:	National Committee on Quality Assurance (#0038)
NQF Endorsed:	Yes
Description	Percentage of children 2 years of age who had four diphtheria, tetanus and acellular pertussis (DTaP); three polio (IPV); one measles, mumps, and rubella (MMR); three haemophilus influenza type B (HiB); three hepatitis B (HepB); one chickenpox (VZV); four pneumococcal conjugate (PCV); one hepatitis A (HepA); two or three rotavirus (RV); and two influenza (flu)

	vaccines by their second birthday. The measure calculates a rate for each vaccine.
Numerator	Children who received the recommended vaccines by their second birthday.
Denominator	Children who turn 2 years of age during the measurement year.
Data Sources	Hybrid
National Benchmark	2021 Medicaid HMO for Influenza: 47.6% 2021 Medicaid HMO for Combination 10: 35.9% 2021 Medicaid HMO for Combination 2: 70.4% 2021 Medicaid HMO for Combination 2: 63% 2021 Medicaid HMO for Diphtheria, Tetanus, Acellular Pertussis (DTaP/DT): 69.7% 2021 Medicaid HMO for Hepatitis B (HEP B): 84.9% 2021 Medicaid HMO for Haemophilis Influenza Type B (HIB B): 82.6% 2021 Medicaid HMO for Inactivated Polio Virus (IPV): 84.7% 2021 Medicaid HMO for Measles, Mumps, Rubella (MMR): 83.1% 2021 Medicaid HMO for Pneumococcal Conjugate (PCV): 70.7% 2021 Medicaid HMO for Varicella (VZV): 82.9% 2021 Medicaid HMO for Hepatitis A (Hep A): 79.9% 2021 Medicaid HMO for Rotavirus (RV): 68.4% Sources: https://www.ncqa.org/hedis/measures/childhood-immunization-status/; NQF.

Measure:	**Emergency Department Visits** ***MassHealth ACO Monitoring Measure**
Steward:	National Committee for Quality Assurance
NQF Endorsed:	No
Description	Rate of ED visits per 1,000 beneficiary months among children up to age 19.
Numerator	Total number of children up to age 19 who had at least one ED service.
Denominator	1,000 member months among members up to age 19 years of age.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	**Metabolic Monitoring for Children and Adolescents on Antipsychotics (APM)** *** MassHealth ACO Quality Measure (Pediatric ACOs)**
Steward:	National Committee on Quality Assurance (#2800)
NQF Endorsed:	Yes
Description	The percentage of children and adolescents 1 to 17 years of age who had two or more antipsychotic prescriptions and had metabolic testing.

Numerator	Children and adolescents who received glucose and cholesterol tests during the measurement year.
Denominator	Children and adolescents who had ongoing use of antipsychotic medication (at least two prescriptions).
Data Sources	Medicaid claims/encounters data
National Benchmark	2021 Medicaid HMO = 36.6% Source: https://www.ncqa.org/hedis/measures/metabolic-monitoring-for-children-and-adolescents-on-antipsychotics/

Chapter 6: Workforce Initiatives

Measure:	**Adult Access to Preventive/Ambulatory Health Services (AAP)**
Steward:	National Committee on Quality Assurance
NQF Endorsed:	No
Description	This measure is used to assess the percentage of members 20 years of age and older who had an ambulatory or preventive care visit. Medicaid members who had an ambulatory or preventive care visit during the measurement year.
Numerator	One or more ambulatory or preventive care visits during the measurement year.
Denominator	Members 20 years of age and older as of December 31 of the measurement year.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	**Hospital Admissions for Ambulatory Care Sensitive Conditions (Chronic ACSCs)**
Steward:	AHRQ
NQF Endorsed:	No
Description	Rate of admissions for members with chronic ACSCs.
Numerator	The number of acute unplanned hospital admissions for adults with chronic ACSCs (or observation stays).
Denominator	The person-time contributed by members in the population of interest during the measurement period.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	**Hospital Admissions for Ambulatory Care Sensitive Conditions (Acute ACSCs)**
Steward:	AHRQ
NQF Endorsed:	No

Description	Rate of admissions for members with acute ACSCs.
Numerator	The outcome measure is the observed number of acute unplanned hospital admissions for adults with acute ACSCs (or observation stays) per 1,000-member months at risk for admissions.
Denominator	The person-time contributed by members in the population of interest during the measurement period.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	**Plan All-Cause Readmissions (PCR)**
Steward:	National Committee for Quality Assurance (#1768)
NQF Endorsed:	Endorsement Removed
Description	The rate of adult acute inpatient and observation stays that were followed by an unplanned acute readmission for any diagnosis within 30 days after discharge.
Numerator	At least one acute unplanned readmission for any diagnosis within 30 days of the date of discharge from the Index Hospital Stay, that is on or between the second day of the measurement year and the end of the measurement year.
Denominator	Patients 18 years of age and older with a discharge from an acute inpatient stay (Index Hospital Stay) on or between January 1 and December 1 of the measurement year.
Data Sources	Medicaid claims/encounters data
National Benchmark	2021 Medicaid HMO = 10% Source: https://www.ncqa.org/hedis/measures/plan-all-cause-readmissions/

Measure:	**Emergency Department Visits for Individuals with Mental Illness, Addiction, or Co-occurring Conditions** ***MassHealth ACO Quality Measure**
Steward:	MassHealth
NQF Endorsed:	No
Description	Rate of ED visits for members 18 to 64 years of age identified with a diagnosis of SMI and/or substance addiction.
Numerator	The expected number of admissions (or observation stays) for members with mental illness and/or SUD and/or co-occurring conditions when adjusting for the ACO case mix.
Denominator	The expected number of admissions (or observation stays) for members with mental illness and/or SUD and/or co-occurring conditions when adjusting for the ACO case mix.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	**Emergency Department Visits *MassHealth ACO Monitoring Measure**
Steward:	National Committee for Quality Assurance
NQF Endorsed:	No
Description	Rate of ED visits per 1,000 beneficiary months among children up to 19 years of age.
Numerator	Total number of children up to 19 years of age who had at least one ED service.
Denominator	1,000 member months among members up to 19 years of age.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	**Hospital Admissions for Adults with Mental Illness and/or Substance Addiction**
Steward:	None
NQF Endorsed:	No
Description	Rate of acute hospital admissions (or observation stays) for members 18 to 64 years of age identified with a diagnosis of SMI and/or substance addiction.
Numerator	The number of hospital admissions for adults with SMI and/or SUD.
Denominator	The person-time contributed by members in the population of interest during the measurement period.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	**Total Cost of Care (All Covered Services) Broken Down by Individuals with Any SUD-related Diagnosis, OUD Diagnosis, or SMI/SED Diagnosis**
Steward:	None
NQF Endorsed:	No
Description	Costs of all MassHealth covered services.
Numerator	Costs of all MassHealth covered services (excludes cosmetic surgery, treatment for infertility, experimental treatment, personal comfort items, non-covered laboratory services, and other services specified as not covered by MassHealth).
Denominator	The person-time contributed by members in the population of interest during the measurement period.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	Expenditures by Service Category Broken Down by Individuals with Any SUD-related Diagnosis, OUD Diagnosis, or SMI/SED Diagnosis
Steward:	None
NQF Endorsed:	No
Description	Costs for specific categories (e.g., services included in ACO medical risk corridors) and sub-categories of services including inpatient (e.g., non-maternity physical health, maternity, BH), ED visits, outpatient non-BH ((lab and radiology, non-BH outpatient hospital), outpatient BH (e.g., Emergency Services Program, diversionary services), professional services, pharmacy, home health, durable medical equipment, emergency transportation, long-term care, other medical services, and services excluded from the TCOC (e.g., applied behavioral analysis, Children's Behavioral Health Initiative, LTSS).
Numerator	Costs for specific categories and sub-categories of services (calculated separately for each category of service).
Denominator	The person-time contributed by members in the population of interest during the measurement period.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Chapter 7: Hospital Quality and Equity Initiative

Measure:	Health-Related Social Needs Screening *MassHealth ACO Monitoring Measure
Steward:	MassHealth
NQF Endorsed:	No
Description	Percentage of members who were screened for health-related social needs in the measurement year.
Numerator	Specification pending
Denominator	Specification pending
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	Childhood Immunization Status (CIS) *MassHealth ACO Quality Measure (Pediatric ACOs)
Steward:	National Committee on Quality Assurance (#0038)
NQF Endorsed:	Yes
Description	Percentage of children 2 years of age who had four diphtheria, tetanus and acellular pertussis (DTaP); three polio (IPV); one measles, mumps and rubella (MMR); three haemophilus influenza type B (HiB); three hepatitis B (HepB); one chickenpox (VZV); four pneumococcal conjugate (PCV); one hepatitis A (HepA); two or three rotavirus (RV); and two influenza (flu) vaccines by their second birthday. The measure calculates a rate for each vaccine.

Numerator	Children who received the recommended vaccines by their second birthday.
Denominator	Children who turn 2 years of age during the measurement year.
Data Sources	Hybrid
National Benchmark	2021 Medicaid HMO for Influenza: 47.6% 2021 Medicaid HMO for Combination 10: 35.9% 2021 Medicaid HMO for Combination 2: 70.4% 2021 Medicaid HMO for Combination 2: 63% 2021 Medicaid HMO for Diphtheria, Tetanus, Acellular Pertussis (DTaP/DT): 69.7% 2021 Medicaid HMO for Hepatitis B (HEP B): 84.9% 2021 Medicaid HMO for Haemophilis Influenza Type B (HIB B): 82.6% 2021 Medicaid HMO for Inactivated Polio Virus (IPV): 84.7% 2021 Medicaid HMO for Measles, Mumps, Rubella (MMR): 83.1% 2021 Medicaid HMO for Pneumococcal Conjugate (PCV): 70.7% 2021 Medicaid HMO for Varicella (VZV): 82.9% 2021 Medicaid HMO for Hepatitis A (Hep A): 79.9% 2021 Medicaid HMO for Rotavirus (RV): 68.4% Sources: https://www.ncqa.org/hedis/measures/childhood-immunization-status/; NQF.

Measure:	**Comprehensive Diabetes Care: Hemoglobin A1c (HbA1c) Poor Control (>9.0%)** *** MassHealth ACO Quality Measure**
Steward:	National Committee for Quality Assurance (#0059)
NQF Endorsed:	Endorsement Removed
Description	The percentage of patients 18 to 75 years of age with diabetes (type 1 and type 2) whose most recent HbA1c level is >9.0% during the measurement year.
Numerator	Patients whose most recent HbA1c level is greater than 9.0% or is missing a result, or for whom an HbA1c test was not done during the measurement year.
Denominator	Patients 18 to 75 years of age by the end of the measurement year who had a diagnosis of diabetes (type 1 and type 2) during the measurement year or the year prior to the measurement year.
Data Sources	Hybrid
National Benchmark	2021 Medicaid HMO = 42.3% Source: https://www.ncqa.org/hedis/measures/comprehensive-diabetes-care/ * Lower rates signify better performance

Measure:	**Prenatal & Postpartum Care (PPC)/ Timeliness of Prenatal Care *MassHealth ACO Quality Measure**
Steward:	National Committee on Quality Assurance (#1517)
NQF Endorsed:	Measure Retired and Endorsement Removed
Description	The percentage of deliveries of live births between November 6 of the year prior to the measurement year and November 5 of the measurement year. For these women, the measure assesses the following facets of prenatal and postpartum care: • Rate 1: Timeliness of Prenatal Care. The percentage of deliveries that received a prenatal care visit as a member of the organization in the first trimester or within 42 days of enrollment in the organization. • Rate 2: Postpartum Care. The percentage of deliveries that had a postpartum visit on or between 21 and 56 days after delivery.
Numerator	This measure assesses whether pregnant women had timely prenatal and postpartum care visits. It has two rates, one assessing the timeliness of prenatal visits, and one assessing the timeliness of postpartum visits.
Denominator	The percentage of deliveries of live births between November 6 of the year prior to the measurement year and November 5 of the measurement year.
Data Sources	Hybrid
National Benchmark	2021 Medicaid HMO: 83.5% Source: https://www.ncqa.org/hedis/measures/prenatal-and-postpartum-care-ppc/

Measure:	**Follow-Up After Emergency Department Visit for Alcohol and Other Drug Abuse or Dependence (FUA-AD and FUA-CH)**
Steward:	National Committee for Quality Assurance (#3488)
NQF Endorsed:	Yes
Description	The percentage of ED visits for members 13 years of age and older with a principal diagnosis of alcohol or other drug (AOD) abuse or dependence and who had a follow-up visit for AOD. Two rates are reported: • The percentage of ED visits for which the member received follow-up within 30 days of the ED visit (31 total days). • The percentage of ED visits for which the member received follow-up within seven days of the ED visit (eight total days).
Numerator	The numerator consists of two rates: • 30-day follow-up: A follow-up visit with any practitioner, with a principal diagnosis of AOD, within 30 days after the ED visit (31 total days). Include visits that occur on the date of the ED visit. • 7-day follow-up: A follow-up visit with any practitioner, with a principal diagnosis of AOD, within seven days after the ED visit (eight total days). Include visits that occur on the date of the ED visit. These rates are stratified by age (13–17, 18 and older, total).
Denominator	ED visits with a primary diagnosis of alcohol or other drug abuse or dependence on or between January 1 and December 1 of the

	measurement year, where the member was 13 years or older on the date of the visit.
Data Sources	Medicaid claims/encounters data
National Benchmark	2021 Medicaid HMO for follow-up within seven days of ED visit= 11% 2021 Medicaid HMO for follow-up within 30 days of ED visit= 15.9% Source: https://www.ncqa.org/hedis/measures/follow-up-after-emergency-department-visit-for-alcohol-and-other-drug-abuse-or-dependence/

Measure:	**Follow-Up After Hospitalization for Mental Illness (FUH)** ***MassHealth ACO Quality Measure**
Steward:	National Committee for Quality Assurance (#0576)
NQF Endorsed:	Yes
Description	The percentage of discharges for members 6 years of age and older who were hospitalized for treatment of selected mental illness or intentional self-harm diagnoses and who had a follow-up visit with a mental health provider. Two rates are reported: • The percentage of discharges for which the member received follow-up within 30 days after discharge. • The percentage of discharges for which the member received follow-up within seven days after discharge.
Numerator	30-Day Follow-Up: A follow-up visit with a mental health provider within 30 days after discharge. 7-Day Follow-Up: A follow-up visit with a mental health provider within seven days after discharge.
Denominator	Discharges from an acute inpatient setting with a principal diagnosis of mental illness or intentional self-harm on the discharge claim during the first 11 months of the measurement year (i.e., January 1 to December 1) for members 6 years and older.
Data Sources	Medicaid claims/encounters data
National Benchmark	2021 Medicaid HMO for follow-up within seven days post-discharge= 38.4% 2021 Medicaid HMO for follow-up within 30 days post-discharge = 58.7% Source: https://www.ncqa.org/hedis/measures/follow-up-after-hospitalization-for-mental-illness/

Measure:	**Maternal Morbidity**
Steward:	MassHealth
NQF Endorsed:	No
Description	Specification pending.

Measure:	**Controlling High Blood Pressure (CBP-AD)**
Steward:	National Committee for Quality Assurance (#0018) *MassHealth Monitoring Measure

NQF Endorsed:	Yes
Description	The percentage of adults 18 to 85 years of age who had a diagnosis of hypertension (HTN) and whose blood pressure was adequately controlled (<140/90 mm Hg) during the measurement year.
Numerator	Patients whose most recent blood pressure level was <140/90 mm Hg during the measurement year.
Denominator	Patients 18 to 85 years of age who had at least two visits on different dates of service with a diagnosis of hypertension during the measurement year or the year prior to the measurement year.
Data Sources	Hybrid
National Benchmark	2021 Medicaid HMO = 58.6% Source: https://www.ncqa.org/hedis/measures/controlling-high-blood-pressure/

Measure:	**Unnecessary C-Section**
Steward:	Joint Commission National Quality Measures (#PC-02)
NQF Endorsed:	No
Description	Nulliparous women with a term, singleton baby in a vertex position delivered by Cesarean birth.
Numerator	Patients with Cesarean births
Denominator	Nulliparous patients delivered of a live-term singleton newborn in vertex presentation.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	**Emergency Department Visits for Individuals with Mental Illness, Addiction, or Co-occurring Conditions** *** MassHealth ACO Quality Measure**
Steward:	MassHealth
NQF Endorsed:	No
Description	Rate of ED visits for members 18 to 64 years of age identified with a diagnosis of SMI and/or substance addiction.
Numerator	Number of emergency department visits.
Denominator	Enrollees 18 to 64 years of age as of December 31 of the measurement year with a diagnosis of serious mental illness and/or substance use disorder.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	**Emergency Department Visits by Age (Pediatric, Adult)** ***MassHealth ACO Monitoring Measure**
Steward:	National Committee for Quality Assurance

NQF Endorsed:	No
Description	Rate of ED visits per 1,000 beneficiary months among children up to 19 years of age.
Numerator	Total number of children up to 19 years of age who had at least one ED service.
Denominator	1,000 member months among members up to 19 years of age.
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	**Plan All-Cause Readmissions (PCR)**
Steward:	National Committee for Quality Assurance (#1768)
NQF Endorsed:	Endorsement Removed
Description	The rate of adult acute inpatient and observation stays that were followed by an unplanned acute readmission for any diagnosis within 30 days after discharge.
Numerator	At least one acute unplanned readmission for any diagnosis within 30 days of the date of discharge from the Index Hospital Stay, that is on or between the second day of the measurement year and the end of the measurement year.
Denominator	Patients 18 years of age and older with a discharge from an acute inpatient stay (Index Hospital Stay) on or between January 1 and December 1 of the measurement year.
Data Sources	Medicaid claims/encounters data
National Benchmark	2021 Medicaid HMO = 10% Source: https://www.ncqa.org/hedis/measures/plan-all-cause-readmissions/

Chapter 8: Health-Related Social Needs

Measure:	**Health-Related Social Needs Screening** ***MassHealth ACO Monitoring Measure**
Steward:	MassHealth
NQF Endorsed:	No
Description	Percentage of members who were screened for health-related social needs in the measurement year.
Numerator	Specification pending
Denominator	Specification pending
Data Sources	Medicaid claims/encounters data
National Benchmark	None

Measure:	**Controlling High Blood Pressure (CBP-AD)** *** MassHealth Monitoring Measure**

Steward:	National Committee for Quality Assurance (#0018)
NQF Endorsed:	Yes
Description	The percentage of adults 18 to 85 years of age who had a diagnosis of hypertension (HTN) and whose blood pressure was adequately controlled (<140/90 mm Hg) during the measurement year.
Numerator	Patients whose most recent blood pressure level was <140/90 mm Hg during the measurement year.
Denominator	Patients 18 to 85 years of age who had at least two visits on different dates of service with a diagnosis of hypertension during the measurement year or the year prior to the measurement year.
Data Sources	Hybrid
National Benchmark	2021 Medicaid HMO = 58.6% Source: https://www.ncqa.org/hedis/measures/controlling-high-blood-pressure/

Measure:	**Comprehensive Diabetes Care: Hemoglobin A1c (HbA1c) Poor Control (>9.0%)** ***MassHealth ACO Quality Measure**
Steward:	National Committee for Quality Assurance (#0059)
NQF Endorsed:	Endorsement Removed
Description	The percentage of patients 18-75 years of age with diabetes (type 1 and type 2) whose most recent HbA1c level is >9.0% during the measurement year
Numerator	Patients whose most recent HbA1c level is greater than 9.0%, is missing a result, or for whom an HbA1c test was not done during the measurement year.
Denominator	Patients 18-75 years of age by the end of the measurement year who had a diagnosis of diabetes (type 1 and type 2) during the measurement year or the year prior to the measurement year
Data Sources	Hybrid
National Benchmark	2021 Medicaid HMO = 42.3% Source: https://www.ncqa.org/hedis/measures/comprehensive-diabetes-care/ * Lower rates signify better performance

Appendix C: MassHealth Algorithm for Determining Serious Mental Illness (SMI)/ Serious Emotional Disturbance (SEDs)

SMI Algorithm for Adults (18+)	SED Algorithm for Youth (0-17):
At least one acute psychiatric inpatient claim/encounter with any diagnosis of psychotic disorder, bipolar disorder, major depression, or PTSD OR At least two visits to outpatient, IOP, PH, ED, AMCI, or ACCS (different dates of services) with a diagnosis of psychotic disorder, bipolar disorder, or PTSD, with or without a hospitalization OR At least two visits to IOP, Psych Day Treatment PH, ED, AMCI, or ACCS (different dates of services) with a diagnosis of major depression, with or without a hospitalization	At least one acute psychiatric inpatient or CBAT claim/encounter with any diagnosis of psychotic disorder, bipolar disorder, major depression, PTSD, Autism Spectrum Disorder, ADHD, or Conduct Disorder/Oppositional Defiance Disorder OR At least two visits (different dates of service) outpatient, IOP, PH, ED, YMCI, YCCS, or CBHI with a diagnosis of psychotic disorder, bipolar disorder, or PTSD OR At least two visits (different dates of service) IOP, PH, ED, YMCI, YCCS, or CBHI with a diagnosis of major depression, Autism Spectrum Disorder, ADHD, or Conduct Disorder/Oppositional Defiance Disorder
SMI ICD-10 Codes	**SED ICD-10 Codes**
Psychotic Disorders: F20, F200-F205, F208, F2081,F2089, F209, F21-F25, F250, F251, F258, F259, F28, F29, Bipolar Disorders: F30, F301, F3010-F3013, F302-F304, F308, F309, F31, F310, F311, F3110-F3113, F312, F313, F3130- F3132, F314-F316, F3160 -F3164, F317, F3170-F3178, F318, F3181, F3189, F319 Depressive Disorders: F32, F321-F325, F328, F3281, F3289, F329, F33, F331-F334, F3340, F3341, F338-F341, PTSD: F43, F430, F431, F4310 – F4312	Psychotic Disorders: F20, F200-F205, F208, F2081, F2089, F209, F21-F25, F250, F251, F258, F259, F28, F29 Bipolar Disorders: F30, F301, F3010-F3013, F302-F304, F308, F309, F31, F310, F311, F3110-F3113, F312, F313, F3130- F3132, F314-F316, F3160 -F3164, F317, F3170-F3178, F318, F3181, F3189, F319 Depressive Disorders: F32, F321-F325, F328, F3281, F3289, F329, F33, F331-F334, F3340, F3341, F338-F341, PTSD: F43, F430, F431, F4310 – F4312 Conduct Disorders: F630-F632, F638, F6381, F6389, F639, F91, F910-F913, F918, F919, Z72810, Z72811 ADHD: F90, F900 – F902, F908, F909 Autism Spectrum Disorder: F84, F840, F842, F843, F845, F848, F849"
Inpatient: Revenue code between 100 and 219; ED: 99281, 99282, 99283, 99284, 99285, 99288 Or revenue code 450, 451, 452, 456, 459, 981; Outpatient: 95004-95199, 96900-96922, 96999, 99201-99215, 99241-99245, 99341-99350, 99354-99355, 99357-99360, 99366-99368, 99374-99397, 99432, 99450, 99455, 99460, 99499,99401-99405, 99408-99429, 99606, 99607, T1015, 99050-99058, 0500F-0503F, 90918-90925, 97802-97804, 99024, 99078, 99170-99175, 99195-99199, 99500-99599, T1502, T1023-T1026, T1028-T1030, 0001F, G0101-G0122, G0127, G0166-G0168, G0179, G0180-G0182, G0246-G0250, G0257, G0317-G0327, G0344, G0372, G0402, G0438, G0439, G0466-G0470, M0064, M0076, M1204, Q0081-Q0085, S0220, S0265, S0302, S0315-S0320, S0390, S0395, S0601-S0630, S0812, S0820, S2260, S0199, S8110, S9075, S9083-S9090, S9381-S9401,	Inpatient: Revenue code between 100 and 219; ED: 99281, 99282, 99283, 99284, 99285, 99288 Or revenue code 450, 451, 452, 456, 459, 981; CBAT: H0037 or Revenue Code 1001 Outpatient: 95004-95199, 96900-96922, 96999, 99201-99215, 99241-99245, 99341-99350, 99354-99355, 99357-99360, 99366-99368, 99374-99397, 99432, 99450, 99455, 99460, 99499,99401-99405, 99408-99429, 99606, 99607, T1015, 99050-99058, 0500F-0503F, 90918-90925, 97802-97804, 99024, 99078, 99170-99175, 99195-99199, 99500-99599, T1502, T1023-T1026, T1028-T1030, 0001F, G0101-G0122, G0127, G0166-G0168, G0179, G0180-G0182, G0246-G0250, G0257, G0317-G0327, G0344, G0372, G0402, G0438, G0439, G0466-G0470, M0064, M0076, M1204, Q0081-Q0085, S0220, S0265, S0302, S0315-

SMI Algorithm for Adults (18+)	SED Algorithm for Youth (0-17):
S9436-S9474, S9490-S9562, 90791, 90792, 90801-90802, 90804-90824, 90826-90829, 90832-90834, 90836-90847, 90849, 90853, 90855, 90857, 90862-90899, H0001-H0009, H0012-H0014, H0016-H0019, H0021-H0030, H0033-H0034, H0036, H0037, H0041-H0042, H0046-H2010, H2013-H2014, H2016-H2019, H2020-H2037, G0177, 96150-96155, T1007-T1010, H2104, H5300, HIVE2, HJ201, HOOO4, S9475-S9479, S9481-S9483, G0396, G0397, G0410-G0411, G0473, G8466, G8477, G8128, G8467, Q4094, T1006, T1012, 0359T, 0360T, 0361T, 0362T, 0363T, 0364T, 0365T, 0366T, 0367T, 0368T, 0369T, 0370T, 0371T, 0373T, 0374T; Revenue codes 900-904,910,911,914-919,931,932,944,945,961,1003-1004; Outpatient Diversionary Including Intensive Outpatient, PH, Community Support Services and Psych Day Treatment: H2015 or H2016 with modifier SE or +, S9480, H2012, H0015 H0035, Revenue codes 905, 906, 907; ESP/AMCI: H2011 with or without modifier HO, HN, HB, S9484, S9485 with modifier HB, HE, U1 or plan submits claim as ESP service; ACCS S9485 with modifier ET; PACT: H0039, H0040, Revenue codes 912, 913; Psych Day Treatment: H2012	S0320, S0390, S0395, S0601-S0630, S0812, S0820, S2260, S0199, S8110, S9075, S9083-S9090, S9381-S9401, S9436-S9474, S9490-S9562, 90791, 90792, 90801-90802, 90804-90824, 90826-90829, 90832-90834, 90836-90847, 90849, 90853, 90855, 90857, 90862-90899, H0001-H0009, H0012-H0014, H0016-H0019, H0021-H0030, H0033-H0034, H0036, H0037, H0041-H0042, H0046-H2010, H2013-H2014, H2016-H2019, H2020-H2037, G0177, 96150-96155, T1007-T1010, H2104, H5300, HIVE2, HJ201, HOOO4, S9475-S9479, S9481-S9483, G0396, G0397, G0410-G0411, G0473, G8466, G8477, G8128, G8467, Q4094, T1006, T1012, 0359T, 0360T, 0361T, 0362T, 0363T, 0364T, 0365T, 0366T, 0367T, 0368T, 0369T, 0370T, 0371T, 0373T, 0374T; Revenue codes 900-904,910,911,914-919,931,932,944,945,961,1003-1004; Outpatient Diversionary Including Intensive Outpatient, PH: S9480, H0015 H0035, Revenue codes 905, 906, 907 CBHI: 90791 or 90801 and modifier HA as 1st or 2nd modifier, H0038, H0023 with modifier HT, T1017 with modifier HN or HO, H2014 with modifier HN or HO, H2019 with modifier HN or HO, H2011 with modifier HN or HO, 96110, H0038; H2011, H2014, H2019, T1017 with modifier HN or HO; T1027 with modifier EP, H0023 with modifier HT Outpatient ABA: H0031, H0032, H2012,or H2019 and modifier U2 YMCI: S9485 with modifiers HA HE, HA U1; H2011 with modifier HA, HE, HO, HN, HO, and HA, or HA U1, HN, and HA YCCS: S9485 with modifier HA ET, EF, TG