Evaluation of the Maryland Total Cost of Care Model: Implementation Report

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Acronyms

AAPM	Advanced Alternative Payment Model
AMS	Applied Medical Software
BPCI-A	Bundled Payment for Care Improvement Advanced
BETOS	Berenson Eggers Type of Service
BMI	body mass index
CAHPS	Consumer Assessment of Healthcare Providers and Systems
CMS	Centers for Medicare & Medicaid Services
CPCP	Comprehensive Primary Care Payments
CRISP	Chesapeake Regional Information System for our Patients
CRP	Care Redesign Program
CTO	Care Transformation Organization
CY	calendar year
DPP	Diabetes Prevention Program
ECIP	Episode Care Improvement Program
HCC	Hierarchical Condition Category
HCAHPS	Hospital Consumer Assessment of Healthcare Providers and Systems
HHA	home health agency
HSCRC	Health Services Cost Review Commission
MDAPM	Maryland All-Payer Model
MDPCP	Maryland Primary Care Program
MD TCOC	Maryland Total Cost of Care
MHAC	Maryland Hospital Acquired Infection Conditions
PAU	Potentially Avoidable Utilization
PBPM	per beneficiary per month

PCP	primary care provider
PFAC	patient and family advisory council
PQI	Prevention Quality Indicator
PUMA	Public Use Microdata Area
QBR	Quality-Based Reimbursement Program
QPP	Quality Payment Program
RIF	research identifiable files
RRIP	Readmissions Reduction Incentive Program
RY	rate year
SBIRT	Screening, Brief Intervention, and Referral to Treatment
SIHIS	Statewide Integrated Health Improvement Strategy
SNF	skilled nursing facility

Executive Summary

In 2018, the Centers for Medicare & Medicaid Services (CMS) and the state of Maryland signed an agreement establishing the Maryland Total Cost of Care (MD TCOC) Model (CMS 2018). This agreement marks one of the first times CMS has held a state accountable for the total cost of medical care for its Medicare fee-for-service beneficiaries (Sapra et al. 2019). Maryland has committed to generating $2 billion in Medicare savings, relative to national trends, over eight years. If it fails to do so, CMS can remove Maryland's unique waiver authority to set the prices that Medicare pays for hospital care in the state. Through the MD TCOC Model, CMS and Maryland are creating incentives and supports for hospitals, primary care practices, and other providers to transform care so they will reduce medical spending, enhance quality of care, and improve population health throughout the state.

CMS is testing this model over eight years (2019 to 2026) under its authority to test innovations that hold promise for reducing Medicare spending while increasing, or at least preserving, quality of care. By December 2024, CMS will decide whether to expand the model or elements of it. If CMS decides not to expand the model, the state can propose a new model to test by January 2026. If approved, the new model would be implemented by January 2029. If CMS does not approve a new test, regulated hospitals in Maryland will transition to the prospective payment systems that govern Medicare hospital spending in the rest of the country by January 2029.

This is the first report for the independent evaluation of the MD TCOC Model. We use program data and Medicare claims to describe model implementation in the first two years (2019 to 2020). Although we have not yet estimated the model's impacts on cost and quality outcomes, we will in the future. The findings in this report will serve as a foundation for interpreting future impact estimates, including what aspects of the model might drive them.

A. Model origin

The MD TCOC Model builds directly from the Maryland All-Payer Model (MDAPM), which ran under CMS authority from 2014 to 2018. Under that model, which focused on hospitals, Maryland committed to reducing Medicare hospital spending and to improving hospital-based quality of care. Maryland used its unique all-payer hospital rate-setting system to start paying hospitals based on prospective all-payer global budgets rather than fee for service (FFS). These budgets, set by Maryland's Health Services Cost Review Commission, created strong incentives for hospitals to reduce avoidable hospital services because doing so could improve their margins. These budgets also enabled the state to guarantee that it could meet hospital savings targets because the state directly set spending growth for all acute care hospitals. An independent evaluation found, using a matched comparison group, that the MDAPM reduced Medicare hospital admissions by 7 percent, decreased hospital spending by almost $800 million (4 percent), and decreased total Medicare Part A and B spending by almost $1 billion (2 percent; Haber et al. 2019). The state also met quality goals, including reducing in-hospital complications and readmissions.

The MD TCOC Model extends the MDAPM beyond hospital walls by expanding statewide accountability and broadening the incentives and supports to providers to transform care. Rather than being accountable only for hospital spending, Maryland is now required to generate $2 billion in *total* Medicare Part A and B savings, which includes hospital and non-hospital spending, over eight years (relative to a 2013 baseline trended forward at the national growth rate in Medicare spending). Further, the state has set new quality goals that go beyond the hospital, including increasing follow-up after discharge; decreasing avoidable hospital admissions (a measure of ambulatory care quality); reducing mean body mass index, diabetes, and drug overdose deaths in the state; and increasing the share of beneficiaries attributed to providers with accountability for total cost of care. Consistent with these broader goals, the MD TCOC Model engages a wider range of providers, including primary care practices, and more directly incentivizes hospitals to work with care partners outside the hospital to improve the quality and efficiency of episodes of care.

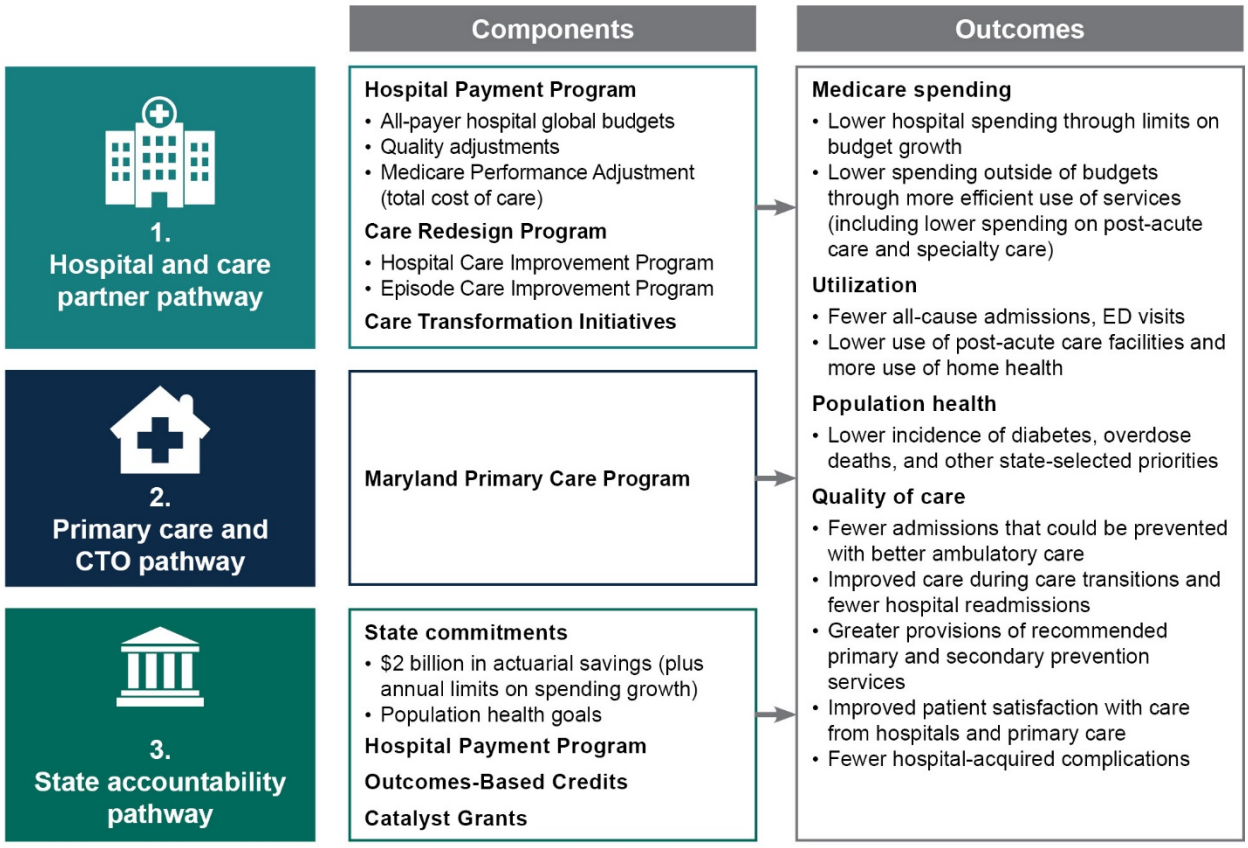
B. Three pathways to outcome improvements

The MD TCOC Model includes several components, which we organized into three pathways to improved outcomes (Figure ES.1).

1. The hospital and care partner pathway

- The Hospital Payment Program continues all-payer global budgets and adjusts these budgets based on hospitals' performance on quality measures.
- The new Medicare Performance Adjustment adjusts Medicare payments to hospitals based on total cost of care (not just hospital care) over the year for each hospital's attributed Medicare FFS beneficiaries.
- The Care Redesign Program has two tracks. The Hospital Care Improvement Program (HCIP), which began in 2017, allows hospitals to pay in-hospital physicians for efforts to improve quality and efficiency of hospital care. This track helps to counter an early concern under the MDAPM that hospital-based physicians, still rewarded for volume under an FFS system, did not face the same incentives as hospitals to reduce avoidable acute care. The Episode Care Improvement Program (ECIP), which began in 2019 and reflects the MD TCOC Model's broader scope, pays hospitals for successfully working with non-hospital partners to reduce total costs for episodes of care that start in the hospital but end 90 days later.
- Care Transformation Initiatives also pay hospitals for efficient episodes of care but allow hospitals more flexibility in defining the episodes and interventions.

Figure ES.1. Three pathways to improved outcomes



CTO = Care Transformation Organization; ED = emergency department.

2. The primary care and Care Transformation Organization pathway

The Maryland Primary Care Program (MDPCP), which started in 2019, provides new payments and supports to primary care practices for their efforts to improve the comprehensiveness and quality of primary care. The payments include fixed monthly care management fees and smaller performance-based incentive payments. Practices can partner with external Care Transformation Organizations that provide care managers and other supports to help practices meet care delivery requirements. Practices join in one of two tracks, with Track 2 offering more financial support in exchange for more extensive care delivery requirements. Further, Track 2 practices receive some payment through partial capitation, rather than only FFS, to support non-traditional modes of patient engagement. All practices that join as Track 1 must transition to Track 2 by the end of their third year in the model.

3. The state accountability pathway

- Under the Hospital Payment Program, Maryland directly sets the growth in hospital budgets across the state, which strongly influences whether the state meets Medicare savings targets.

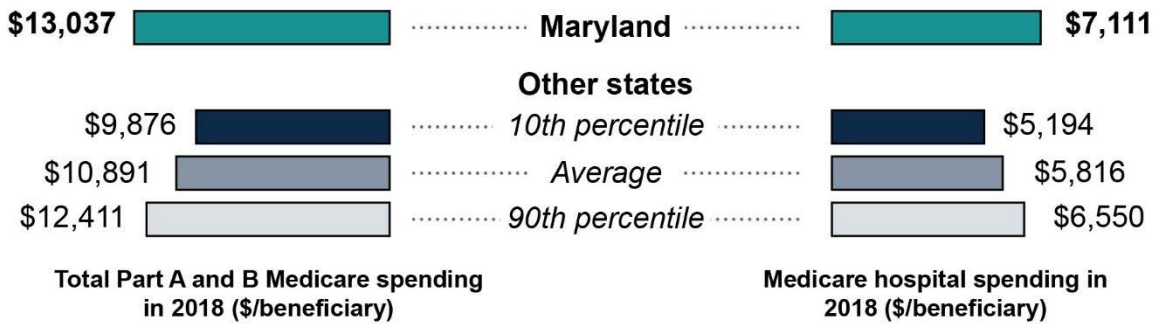
- The state can earn Outcomes-Based Credits if it improves select population health outcomes. CMS will deduct the projected long-term savings to Medicare earned by lower disease burden from the state's savings targets.
- Maryland awards competitive Catalyst Grants to hospitals that partner with community organizations to help the state meet population health goals.

C. Room for improvement on targeted outcomes at the start of the model

Using Medicare claims and other secondary data sources, we find that there was substantial room to improve targeted outcomes in 2018 before the MD TCOC Model began.

- After adjusting for differences in demographics and disease burden, Maryland had higher total Medicare Part A and B spending per beneficiary than any other state, driven largely by high hospital spending (Figure ES.2). The high hospital spending per beneficiary is attributable to high Medicare prices for hospital care in Maryland, not high volumes of care.

Figure ES 2. Total Medicare fee-for-service spending in 2018 was higher in Maryland than other states, driven largely by higher hospital spending



Note: We adjusted Medicare spending in each state by weighting beneficiaries to match Maryland beneficiaries' demographics and health status.

- Maryland had the seventh highest rate of non-hospital spending in the country, an area that the MD TCOC Model's new incentives target for improvement.
- Several indicators suggest room to improve hospital and health-system performance, though gains under the MDAPM have decreased that room to some degree. During the MDAPM (from 2014 to 2018), hospital admission rates, 30-day unplanned readmissions, and potentially preventable admissions fell substantially faster in Maryland than in rest of the nation. Further, rates of timely follow-up after a hospitalization or emergency department (ED) visit for an acute exacerbation of a chronic condition increased more in Maryland than in the rest of the nation. Nonetheless, Maryland is not yet the top-performing state on any of these measures, indicating room for greater coordination and communication between hospitals, post-acute providers, community-based providers, and beneficiaries.

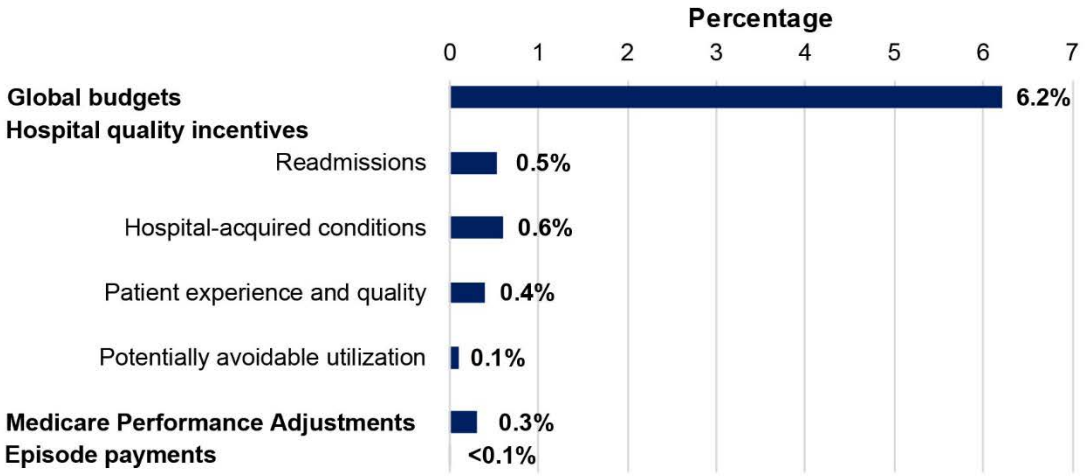
- In 2018, there was also meaningful room to improve the population health outcomes that the MD TCOC Model targets. The prevalence of diabetes and obesity and mean body mass index among Maryland residents increased in Maryland from 2013 to 2018 and was near national averages at the start of the MD TCOC Model.

D. Key implementation findings, by pathway

1. The hospital and care partner pathway

- Global budgets provided the strongest incentive in the MD TCOC Model for hospitals to transform care in 2019 (Figure ES.3).

Figure ES.3. Strength of hospital incentives in 2019, as measured by the range in price or revenue changes across hospitals in the model



Notes: We defined the strength of each incentive as the range (from the 25th to the 75th percentile) in the realized incentives across all 52 hospitals in the model. For global budgets, we expressed the realized incentive as the percentage change in prices between what a hospital charged in the year (on average) and the prospectively set prices at the start of the year. Under Maryland's global budget system, hospitals still charge per service and raise prices during the year if volumes decline (or decrease prices if volumes increase) to meet their global budgets. For the other incentives, Maryland directly increases or decreases hospital revenue, and we expressed those changes as a percentage of the hospital's revenue.

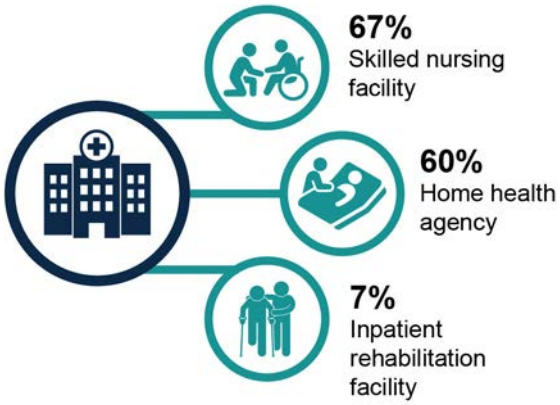
- Although individual hospital incentives to improve the quality of care are relatively small (compared to global budget incentives), they are important because they complement global budgets or limit the risk of stinting on care.
- So far, the new incentives for hospitals and their care partners to reduce total cost of care (overall and for specific episodes of care) have been modest.
- Most hospitals participated in the HCIP in 2019, reaching almost a third of Medicare discharges, but participation waned significantly in 2020.

- In 2019, almost a third of hospitals participated in ECIP, reaching about 3 percent of Medicare discharges in the state. In 2020, 42 percent of hospitals participated.
- Hospitals participating in ECIP commonly partnered with skilled nursing facilities and home health agencies to improve the efficiency and quality of post-acute care (Figure ES.4).
- Most (83 percent) hospitals plan to participate in Care Transformation Initiatives in 2021. These initiatives, similar to ECIP, reward hospitals for more efficient episodes of care but allow hospitals more flexibility to design the episodes and interventions.

2. The primary care and Care Transformation Organization pathway

- In all, 468 primary care practices joined MDPCP in 2019 or 2020, reaching 29 percent of primary care physicians, and 47 percent of Medicare FFS beneficiaries in Maryland (Figure ES.5).[1]
- In 2019, most practices (78 percent) partnered with a Care Transformation Organization to help them meet care delivery requirements.
- In 2019, CMS paid each participating practice an average of $163,751 to support their transformation efforts in 2019, increasing a practice's total revenue (across all payers) by about 9 percent.

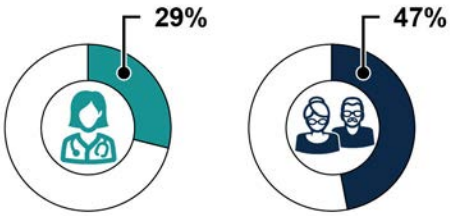
Figure ES.4. In 2019, hospitals most commonly used SNFs and HHAs as ECIP care partners



Note: N = 15 hospitals participating in ECIP in 2019.

ECIP = Episode Care Improvement Program; HHA = home health agency; SNF = skilled nursing facility.

Figure ES.5. In 2020, MDPCP reached 29 percent of primary care physicians and 47 percent of Medicare FFS beneficiaries in Maryland

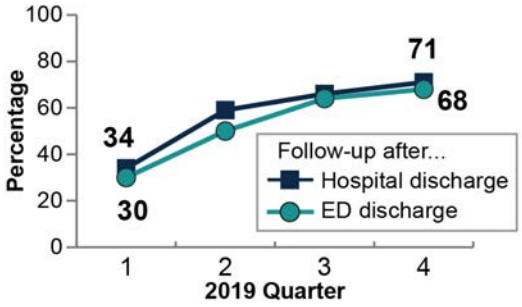


FFS = fee for service; MDPCP = Maryland Primary Care Program.

[1] This number excludes the 13 practices that withdrew or merged with another participating practice in 2019 or 2020.

- In 2019, practices self-reported making progress across the five primary care functions in ways that could improve outcomes. This included expanding access outside of standard business hours, doubling follow-up rates after hospital discharge (Figure ES.6), expanding care management services to high-risk patients, and reaching more patients with behavioral health supports in the practice.

Figure ES.6. Practices doubled their rates of follow-up after ED or hospital discharge



Source: Mathematica's analysis of 2019 MDPCP portal data submitted by practices to CMS.

Notes: N = 375 MDPCP practices. We define hospital follow-up as follow-up within one week for patients discharged from the ED and within two days for patients discharged from the hospital.

ED = emergency department; MDPCP = Maryland Primary Care Program.

3. The state accountability pathway

- In 2019, the state generated savings ($365 million) to Medicare that well exceeded the target ($120 million) for the year. This means that actual spending in Maryland was $365 million lower than would have occurred if Maryland's spending in 2013 had grown at the same rate as the rest of the nation in Medicare spending. Most of the savings in 2019 ($277 million) came from Maryland's lower-than-the-national-growth rate in earlier years (2014 to 2018), and an additional $88 million largely came from its lower-than-the-national-growth rate in 2019. These savings, which CMS calculated using a formula specified in the legal agreement establishing the MD TCOC Model, are not the evaluation estimates of model impacts using a matched comparison group. Those impact estimates will appear in future reports.
- During the COVID-19 pandemic, hospital global budgets have provided Maryland hospitals with a level of financial stability not available in much of the rest of the country. Hospital volumes declined in Maryland early in the pandemic, but global budgets prevented large losses in revenue.
- To help meet population health goals, Maryland is implementing new initiatives that focus on hospitals, community organizations, and MDPCP practices. Maryland is awarding $165 million in Regional Partnership Catalyst Grants to hospitals and their community partners to develop and implement diabetes prevention, diabetes management, and behavioral health crisis programs. These grants are supported by the Health Services Cost Review Commission's authority under the MD TCOC Model to set all-payer hospital global budgets. Further, CMS and Maryland are providing supports and incentives for MDPCP practices to help patients achieve healthy weights and to identify and help treat patients with substance abuse disorders.

E. Conclusion and next steps for the evaluation

In its first two years (2019 and 2020), the MD TCOC Model engaged a wide range of providers and began to transform care throughout the state. The hospital global budgets, which began in the MDAPM, continued to provide hospitals with strong incentives to reduce avoidable and low-value acute care. New incentives to reduce the total cost of care have encouraged hospitals to partner with post-acute care facilities, home health agencies, and other agencies to improve the quality and efficiency of episodes of care. The state and CMS have engaged primary care providers, who were largely not part of the MDAPM, through MDPCP. Finally, the state has formally committed to improving population health measures and is using MDPCP and Catalyst Grants to help achieve those goals. These transformation activities throughout the state can potentially lead to desired outcomes, especially given the meaningful room to improve on targeted outcomes.

In the future, we will use a matched comparison group to formally estimate the impacts of the MD TCOC Model on a range of outcomes measurable in Medicare claims and other secondary data. This will include assessing whether the model decreases Medicare spending; improves the efficiency of hospital and non-hospital care; improves measures of hospital and health system performance; and improves population health outcomes. Further, we will use primary and secondary program data to understand how primary care practices, hospitals and their partners, and health systems perceive and respond to the various incentives and supports in the model. We plan to integrate these implementation findings with the estimates of model impacts to identify what might be driving the overall impacts.

Chapter 1. Introduction

1.1. Overview of the MD TCOC Model

On July 9, 2018, the Centers for Medicare & Medicaid Services (CMS) and the state of Maryland signed an agreement establishing the Maryland Total Cost of Care (MD TCOC) Model (CMS 2018). This agreement marks one of the first times CMS has held a state accountable for the total cost of medical care for its Medicare fee-for-service (FFS) beneficiaries (Sapra et al. 2019). Maryland has committed to generating $2 billion in Medicare savings (relative to national spending trends) over eight years. If it fails to do so, CMS can remove the unique waiver authority that allows Maryland to set the prices that Medicare pays for hospital care in the state. Through the MD TCOC Model, CMS and Maryland are creating incentives and supports for hospitals, primary care practices, and other providers to transform care so they can reduce medical spending, enhance quality of care, and improve population health throughout the state.

CMS is testing this model over eight years (2019 to 2026) under its authority to test innovative care redesign models that hold promise for reducing Medicare spending while increasing, or at least preserving, quality of care. By December 2024, CMS will decide whether to expand the model or elements of the model. If CMS decides not to expand the model, the state may propose a new model test no later than January 2026. Such a model test, if approved, would be implemented on, or before, January 2029. If CMS does not approve a new model test, regulated hospitals in Maryland will transition to the prospective payment systems that govern Medicare hospital spending in the rest of the country by January 2029. This transition would remove Maryland's authority to set the prices that Medicare pays for hospital care in the state.

Maryland would like to retain its authority to set Medicare prices because it is a cornerstone of its all-payer hospital rate-setting system. In most of the country—where commercial hospital rates are not regulated—commercial payers pay higher rates for hospital care, and Medicare and Medicaid pay lower rates (MedPAC 2020). In Maryland, an independent commission sets the rates that all payers pay for hospital care, resulting in similar rates across commercial and public payers (Haber et al. 2019). The goals of this all-payer rate-setting system are to constrain the growth in hospital spending; to ensure hospitals in the state have the revenue they need to provide efficient, high quality services to all Marylanders (regardless of insurance status); and to distribute the cost of hospital financing equitably across payers (Murray and Berenson 2015). Removing the waiver would disrupt hospital payments throughout the state, lowering hospitals' Medicare and Medicaid revenue and likely increasing commercial rates.

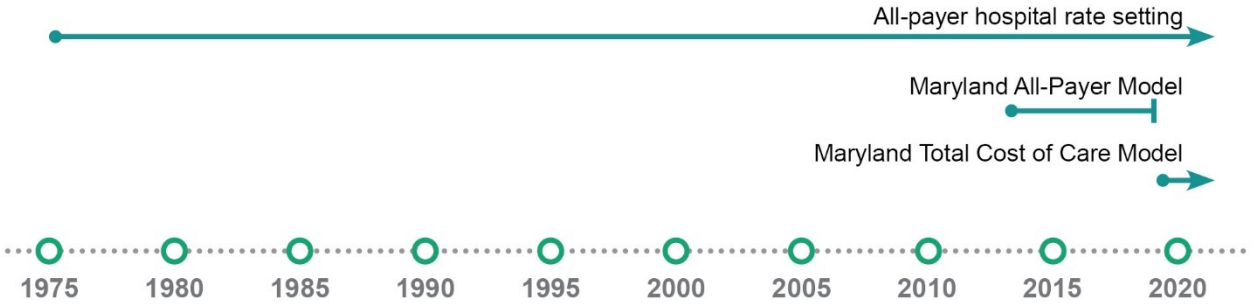
This is the first public report for the independent evaluation of the MD TCOC Model. CMS contracted with Mathematica to assess whether, and how, the MD TCOC Model meets its aims. In future reports, we will use a rigorous difference-in-differences design to estimate the impacts of the model on cost and quality outcomes. This report focuses on the design and implementation of the model in its first two years (2019 and 2020), which we and CMS can use in the future to help inform our understanding of what drives estimates of model impacts. Because the COVID-19 pandemic prevented us from interviewing primary care practices, hospitals, and other providers, this report relies primarily on secondary data (Medicare claims or monitoring data from CMS and Maryland) to describe model implementation.

Although some portions of the MD TCOC Model include multiple payers for medical care in the state, the focus of the model test and therefore the evaluation is on Medicare FFS beneficiaries. For example, the state has committed to reducing growth in total Medicare FFS spending. Accordingly, our future estimates of model impacts will focus primarily on Medicare FFS beneficiaries.

1.1.1. Model origins

The MD TCOC Model builds from a unique hospital financing system in Maryland that stretches back decades (Figure 1.1). In 1974, Maryland—in response to rising hospital spending and rising uncompensated care—started regulating its hospital spending across commercial payers and Medicaid (Murray and Berenson 2015). In 1977, hospital regulation truly became an all-payer model when CMS issued a waiver that allowed Maryland to set the prices that Medicare paid for hospital services. Maryland could set these prices so long as the state met a waiver test—namely, that growth in Medicare spending per hospital stay did not exceed the growth nationally. This regulatory approach succeeded in limiting the growth in spending per admission. Hospitals, however, compensated for lower price increases by increasing their volume of services. From 2001 to 2008, hospital admission rates grew twice as fast in Maryland as they did in the rest of the country (2.4 versus 1.0 percent per year), substantially increasing total hospital spending (Murray and Berenson 2015).

Figure 1.1. The MD TCOC Model builds from a unique hospital financing system in Maryland that stretches back decades



In 2014, CMS and Maryland launched the Maryland All-Payer Model (MDAPM), which fundamentally changed how CMS held the state accountable for hospital spending and how the state regulated its hospitals. Rather than requiring the state to limit the growth in prices per stay, CMS now required that Maryland limit the growth in total hospital spending per Maryland resident, which included prices and volume.[2] The MDAPM agreement also required Maryland to improve several hospital-based quality measures, including reducing 30-day hospital readmission rates to the national level and decreasing rates of preventable complications that develop during a hospital stay.

[2] In addition to limiting grow in per hospital spending per resident across all payers, the agreement limited growth in Medicare FFS hospital spending per Medicare beneficiary.

To help meet these aims, Maryland shifted from paying hospitals for each service they provided (known as FFS) to paying hospitals based on global budgets. At the start of each state fiscal year, an independent commission—the Health Services Cost Review Commission (HSCRC)—sets a global budget across all payers for each hospital, with the size of the budget tied to historical volume, performance on quality measures, and other factors. Hospitals continue to bill Medicare and other payers per service, but they continually adjust the prices they charge so that by the end of the year, their total revenue (price times volume) matches their budgets. These global budgets created strong incentives for hospitals to invest in strategies that reduce avoidable or low-value inpatient and outpatient services. These reductions in hospital service use lower operating expenses and—because revenues are fixed—increase hospital margins.

The MDAPM met or exceeded the targets in the state agreement. From 2014 to 2018, all-payer hospital spending grew by 1.92 percent per year, well below the 3.58 percent target set based on the long-term growth rate of Maryland's economy (HSCRC 2019a). The state's average yearly growth in Medicare hospital spending was lower than the average growth nationally, leading to an estimated $1.4 billion in cumulative Medicare savings on hospital spending (well above the $330 million target). Further, hospital readmission rates fell from above the national average to just below it, and preventable complications of care declined by almost 50 percent (Sharfstein et al. 2018).

Several evaluations used comparison groups to determine whether the MDAPM caused these improvements or whether they reflect broader trends occurring elsewhere in the country (Roberts et al. 2018; Sharfstein et al. 2018; Haber et al. 2018; Haber et al. 2019). These evaluations drew somewhat different conclusions—partly because of challenges finding a valid comparison group for this statewide initiative and the differences in statistical modeling assumptions. Nonetheless, the weight of the evidence across these evaluations suggests that many of the outcome improvements in Maryland can be attributed to impacts of the model. In particular, the final evaluation for the MDAPM found—using a matched comparison group—that the MDAPM reduced Medicare hospital admissions by about 7 percent, reduced hospital spending by almost $800 million (4 percent), and reduced total Parts A and B spending by almost $1 billion (3 percent) over 4.5 years (Haber et al. 2019).

Despite this progress, important areas remain for continued improvement—which is what the incentives and supports under the MD TCOC Model aim to encourage. By focusing on growth in hospital spending, the MDAPM agreement raised the possibility that non-hospital spending would grow quickly, potentially outpacing declines in hospital spending and increasing total cost of care. Under the MD TCOC Model, Maryland has committed to reducing growth in Medicare spending across all services, not just hospital care. Under the MDAPM, the incentives and supports to transform care largely focused on hospitals; indeed, most of the care changes observed occurred within hospital walls (Haber et al. 2018, 2019). The MD TCOC Model engages a wider range of providers, including primary care practices, and more directly incentivizes hospitals to work with care partners outside the hospital to improve the quality and efficiency of episodes of care.

1.1.2. Model components

The MD TCOC Model contains several components designed to engage a wide range of providers (Table 1.1) and the state overall in transforming care.[3] Some of these components are similar to federal primary care or episode-based initiatives, which Maryland, because of its unique hospital payment system, has not been eligible to participate in.

a. State accountability for cost and quality

The state commitments form the foundation for all other components, shaping their purpose and design. In its legal agreement with CMS (signed in 2018), Maryland committed to generating $2 billion in Part A and B savings to Medicare from 2019 to 2026. CMS will determine whether Maryland met this saving requirement by comparing the amount Medicare actually paid over that period with the amount it would have paid if per-beneficiary spending in Maryland in 2013 (before the MDAPM began) increased at national growth rates.[4] Further, the state committed to keeping the growth in hospital spending per person across all payers below 3.58 percent, the long-term growth rate of the state's economy. Maryland also committed to maintaining gains it made in reducing readmissions and hospital-acquired complications under the MDAPM. In a separate memorandum of understanding (dated November 2019), Maryland committed to setting additional quality goals by the end of 2020 (Center for Medicare & Medicaid Innovation 2019).

The MD TCOC legal agreement also requires Maryland to propose at least three population health goals for Outcomes-Based Credits. If the state demonstrates—using an agreed upon methodology—that it improved health on these measures, CMS will deduct the expected lifetime savings to Medicare associated with the improvements from the state's savings targets. So far, CMS has approved one outcome: reducing incidence of diabetes.[5]

In December 2020, Maryland proposed three additional quality goals in its Statewide Integrated Health Improvement Strategy (SIHIS) (HSCRC 2020l)[6]:

- *Improve hospital quality of care* by decreasing potentially avoidable hospital admissions and decreasing disparities in hospital readmissions by patient adversity (a variable HSCRC defines based on Medicaid status, race, and neighborhood deprivation).
- *Improve care transformation across the system* by increasing timely follow-up care after acute exacerbations of chronic conditions and increasing the share of beneficiaries attributed to providers that bear some accountability for total cost of care.
- *Improve population health outcomes*, including reducing the mean body mass index (BMI) among adult Maryland residents and decreasing death rates because of opioids or other drug overdoses.

[3] The CMS website (Maryland Total Cost of Care Model | CMS Innovation Center) contains more details about the model.

[4] As discussed in Chapter 5, the agreement sets annual savings targets that sum to more than $2 billion over the eight-year model test. The agreement also establishes other guardrails that limit spending growth each year.

[5] The approved credit applies to type I or type II diabetes (because available data cannot distinguish them). The vast majority of diabetes cases are type II, however, which is more preventable than type I.

[6] On March 17, 2021, CMS approved the SIHIS proposal (CMS 2021).

According to the MD TCOC legal agreement, CMS can stop the model if Maryland does not meet the savings requirements or backslides on hospital quality gains made under the MDAPM. The SIHIS quality goals are less binding, though CMS may consider progress on the goals in its decisions about whether to expand the MD TCOC Model.

b. Hospital Payment Program

Under the MD TCOC Model, HSCRC will continue to set global budgets across all payers for each hospital at the start of each state fiscal year (which begin July 1). As they did under the MDAPM, global budgets create strong incentives for hospitals to decrease avoidable or low-value hospital services, including by shifting care to lower-acuity settings.[7] HSCRC will continue to adjust budgets based on a hospital's performance on quality measures, including readmission rates, hospital-acquired complications, and patient experience. Starting in 2019, Maryland began applying a Medicare Performance Adjustment (MPA), which increases or decreases Medicare payments by up to 1 percent based on the hospital's Medicare total cost of care performance. Specifically, HSCRC attributes all Medicare fee-for-service beneficiaries in the state to a hospital and rewards that hospital if the total Medicare (Part A and B) spending of its attributed beneficiaries falls below a benchmark (and penalizes the hospital if spending lands above the benchmark). By holding hospitals accountable for non-hospital spending, the MPA creates new incentives for hospitals to work with providers and facilities outside the hospital to reduce spending growth.

c. Care Redesign Program

This voluntary program targeting hospitals and their partners currently has two tracks that serve different purposes.[8]

- Under the *Hospital Care Improvement Program (HCIP)*, which began in 2017, CMS waived standard payment rules to allow hospitals to compensate physicians for efforts to improve the efficiency or quality of hospital care.[9] Early in the MDAPM, some hospitals had difficulty engaging physicians in efforts to reduce avoidable or low-value hospital services because these physicians continued to receive FFS payments—which encourage greater volume (Haber et al. 2019). Under HCIP, hospitals can compensate physicians out of their global budgets for participating in improvement activities and reducing avoidable hospital care.
- The *Episode Care Improvement Program (ECIP)*, which began with the MD TCOC Model in 2019, creates new incentives for hospitals to reduce the total cost of episodes of care that extend beyond the hospital. This program is modeled after Bundled Payment for Care Improvement Advanced (BPCI-A) initiative, a nationwide, voluntary episode payment model

[7] To reduce incentives for a hospital to simply shift care to a different hospital, HSCRC implements a market shift policy. This policy reduces budgets for hospitals that shift care to another hospital and increases the budget for the receiving hospital.

[8] 2019 was the last year for a third track, the Chronic Care Improvement Program (CCIP), which had limited participation. HSCRC and CMS may add new tracks in future model years. For example, as of June 2021, HSCRC and CMS are developing a new track, called the Episode Quality Improvement Program, to provide episode-based payments for specialist physicians in Medicare.

[9] Specifically, CMS waived fraud and abuse rules that prevent hospitals from paying providers they do not employ for activities such as referring patients to the hospitals.

that excludes most providers in Maryland.[10] Under ECIP, hospitals select one or more of 23 clinical episodes and receive additional payments if (1) the cost of care across all settings for 90 days after discharge falls below a benchmark and (2) the hospital meets quality metrics. The risk is one-sided to the hospital, meaning the hospital does not owe money to CMS if the cost of the episodes land above benchmarks. Hospitals must partner with at least one practitioner or post-acute facility and report to CMS which allowable interventions these partners provide. Hospitals can (but are not required to) share savings with their partners.

The Care Redesign Program (CRP) counts as an Advanced Alternative Payment Model (AAPM) under the CMS Quality Payment Program. As a result, participating providers can earn a 5 percent increase in their Part B Medicare payments.

d. Care Transformation Initiatives

This voluntary program for hospitals is similar to ECIP in that it creates new incentives for hospitals and their partners to reduce total Medicare costs for episodes of care. Under Care Transformation Initiatives (CTIs), however, hospitals have more flexibility to define their episode types, partners, interventions, and episode duration (which can range from 30 to 365 days). Hospitals define episodes that fit within thematic areas, which so far include care transitions, palliative care, primary care, community-based care, and emergency care. This is a state-led program (without separate CMS oversight), so it does not have the same reporting requirements as ECIP or the same flexibility in payments. Specifically, hospitals do not report interventions to CMS and cannot pay shared savings to partners. (If the hospitals and partners are part of the same health system, however, the system can structure payments to care partners to incentivize participation.) CTIs do not qualify as AAPMs, so participating providers are not eligible to receive the 5 percent bonus for Medicare payments. HSCRC will ensure that new payments to hospitals that succeed in reducing episode spending are fully offset by reduced Medicare payments across all hospitals.

[10] No Maryland hospitals can participate in BPCI-A and only physician group practices in Maryland that also operate in other states can participate.

Table 1.1. The MD TCOC Model includes several components designed to engage a range of providers in reducing medical spending and improving quality of care and population health

Component	Goals	Who receives incentives	Design features	Year began
Hospital Payment Program				
Global budgets	Decrease avoidable or low-value hospital services (inpatient or outpatient)	Hospitals	Prospectively set budget each year across all payers (inpatient and outpatient)	2014
Quality adjustments	Improve performance on hospital quality measures and discourage stinting	Hospitals	Budget adjustments for performance on quality measures	2009 to 2012
Medicare Performance Adjustment	Focus hospital on limiting total cost of care for all Medicare beneficiaries in its area	Hospitals	Payment adjustments based on total cost of care for attributed patients	2019
Care Redesign Program				
Hospital Care Improvement Program	Engage in-hospital physicians in efforts to improve efficiency and quality of hospital care	In-hospital physicians (optional)[a]	Allow hospitals to incentivize in-hospital physicians for allowed interventions	2017
Episode Care Improvement Program	Engage hospitals and their partners in improving efficiency and quality of care for up to 23 clinical episodes that extend 90 days after discharge	Hospitals Practitioners, PAC facilities (optional)[a]	New payments to hospitals for efficient episodes; hospital can (but is not required to) distribute incentives to partners	2019
Care Transformation Initiatives	Engage hospitals in improving efficiency and quality of care for episodes they define in thematic areas (for example, care transitions)	Hospitals	New payments to hospitals for efficient episodes they define	2021
Maryland Primary Care Program	Improve quality and comprehensiveness of primary care in the state	Primary care practices and CTOs	Fixed payments for care changes in several domains; performance-based incentives; partial capitation payments for select primary care services (for Track 2 practices).	2019
Catalyst Grants	Engage hospitals and community partners in efforts to improve population health	Hospitals and their community partners	Competitive grants to hospitals and their community partners to improve population health	2021

[a] Hospitals participating in the Care Redesign Program can, but are not required to, distribute payments to care partners that help to improve the quality and efficiency of hospital care or post-acute care.

CTO = Care Transformation Organization; PAC = post-acute care.

e. Maryland Primary Care Program

The Maryland Primary Care Program (MDPCP) is a voluntary program modeled after the federal Comprehensive Primary Care Plus (CPC+) program, which Maryland providers are not eligible to participate in. In MDPCP, CMS and Maryland provide supports and incentives for primary care practices to provide more comprehensive care across five domains: (1) access and continuity, (2) care management, (3) comprehensiveness and coordination, (4) beneficiary and caregiver experience, and (5) planned care for health outcomes. To support their transformation efforts, practices can partner with Care Transformation Organizations (CTOs). CTOs can be health systems, physician organizations, accountable care organizations, or other organizations that receive financial support from CMS to hire and manage multidisciplinary care teams that can help practices meet care transformation requirements. The Maryland Department of Health (MDH) also provides in-person coaching and other technical support for practice transformation. Practices can earn bonuses for performing well on select quality and utilization measures, including patient satisfaction with their providers and hypertension control.

f. Catalyst Grants

HSCRC, together with the MDH, designed this competitive grant program to help Maryland achieve the population health goals identified for Outcomes-Based Credits and as part of the SIHIS. Five-year grants, which began on January 1, 2021, were awarded to hospitals that formed regional partnerships with community organizations in the state. The grant program has two tracks: one focused on diabetes prevention and another focused on behavioral health. As a condition of continued funding, HSCRC set specific annual scale targets that grantees must achieve. The targets are designed to ensure that funded programs are successful and self-sustaining by the end of the grant performance period. HSCRC funds these grants through its all-payer rate-setting authority. Specifically, HSCRC approved an annual investment of 0.25 percent of statewide all-payer hospital revenue (about $45 million annually). The grant amounts will be added to hospital annual rates as temporary adjustments (HSCRC 2020a).

1.1.3. Model logic

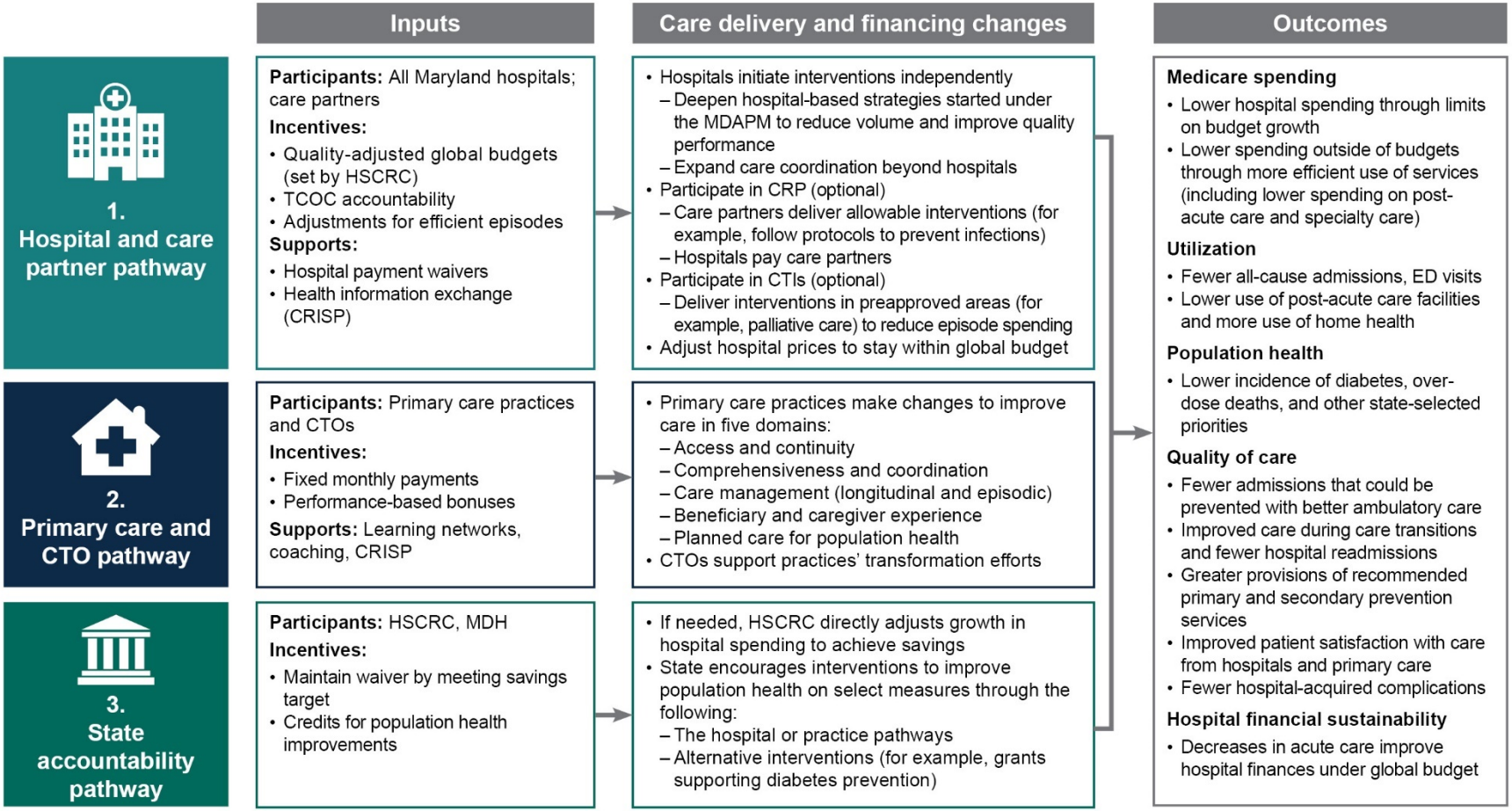
To clarify how the MD TCOC Model could reduce Medicare spending while improving quality of care and population health, we organized the model's components into a logic model (Figure 1.2).

Foundation for how the MD TCOC Model could reduce Medicare spending. The model can reduce Medicare spending in two ways. First, for the roughly 55 percent of total Medicare spending in Maryland that is for hospital care, HSCRC can directly generate savings by limiting growth in hospital budgets across the state. Second, for the remaining 45 percent of spending, the MD TCOC Model could reduce service use. Because Medicare pays for non-hospital spending on a fee-for-service basis, volume reductions translate directly to lower spending. In Maryland's payment environment, successful efforts to reduce avoidable or low-value hospital services do not generally lower Medicare spending.[11] Rather, with

[11] Medicare spending will decrease somewhat if hospital volumes fall faster for Medicare than for other payors. All-payer hospital budgets remain the same, but Medicare pays a smaller share of the total budget. There is some evidence that volumes have declined faster for Medicare recently, though quantifying the effect on Medicare spending is difficult.

fixed budgets, such volume reductions will improve hospital margins. HSCRC must take the additional step of lowering growth in hospital budgets to generate savings. HSCRC chooses to reduce budgets across all hospitals statewide rather than reducing the budgets just for those hospitals that succeed in reducing avoidable acute care, so the model maintains incentives for individual hospitals to reduce volume.

Figure 1.2. Logic for how the MD TCOC Model could reduce Medicare spending while improving quality and population health



MDAPM = Maryland All-Payer Model; MDH = Maryland Department of Health; CRP = Care Redesign Program; CTI = Care Transformation Initiative; CTO = Care Transformation Organization; ED = emergency department; HSCRC = Health Services Cost Review Commission; MD = Maryland.

Paths to improved outcomes. The logic model envisions that the MD TCOC Model will improve outcomes through three paths.

a. The hospital and care partner pathway

The hospitals in Maryland face three types of incentives under the model: (1) quality-adjusted all-payer global budgets, which encourage efforts to reduce avoidable volume and improve performance on quality measures; (2) new Medicare total cost of care accountability through the MPA; and (3) direct incentives (through the ECIP and CTIs) to reduce the Medicare total cost of care for specific episodes of care. Faced with these incentives, hospitals might respond in one or more of three ways:

- *Initiate interventions independently.* This could include sustaining and deepening efforts started in the MDAPM to reduce hospital volumes and improve quality. For example, hospitals could hire nurse care managers to help connect patients who use the emergency department (ED) frequently with a primary care alternative. Further, responding to MPA incentives, hospitals could extend care coordination efforts beyond their walls to reduce non-hospital spending growth.
- *Participate in one or more Care Redesign Program track.* Hospitals could opt into the HCIP track, incentivizing in-hospital physicians to engage in quality improvement activities such as adhering to protocols to prevent infections. Hospitals might also opt into the ECIP track, partnering with physicians or post-acute care facilities to deliver allowable interventions such as enhanced discharge planning that can reduce post-acute care spending.
- *Participate in Care Transformation Initiatives.* Hospitals could design and deliver interventions within thematic areas (for example, palliative care) to reduce the total cost of episodes of care.

These efforts by hospitals and their care partners could lower inpatient admissions and ED visits and improve the quality of in-hospital care (for example, lowering infections) and transitions of care (for example, increasing follow-up visits after discharge and decreasing hospital readmissions). Further, interventions to improve episodes of care could lower non-hospital spending (for example, by shifting some post-acute care from skilled nursing facilities to home health).[12] Any reductions in hospital service use would, initially, translate into higher hospital margins—not reductions in hospital spending. In the long term, these reductions could help make the model sustainable by allowing hospitals to stay financially viable if HSCRC has to limit hospital spending growth to meet savings targets.

b. The primary care and Care Transformation Organization pathway

The primary care practices that join MDPCP will receive monthly care management fees to meet care delivery requirements as well as smaller performance-based incentives. CMS and Maryland will support practices in their transformation efforts by offering a learning network, practice coaches, performance feedback reports, care coordination data and claims analytics. The state also provides a suite of tools in the state's health information exchange (CRISP) specifically designed for MDPCP practices, including a tool to identify patients at risk of avoidable hospital

[12] In ECIP, reductions in post-acute care spending will be partially or perhaps completely offset by additional Medicare payments to hospitals that improved the efficiency of the episode, making ECIP budget neutral to Medicare.

admissions; assistance with integrating behavioral health care into the primary care that practices provide; linkages to community-based organizations; and overall state leadership and connections to public health. Practices might also partner with CTOs to support their transformation. Doing so could be particularly important for smaller practices that otherwise lack the resources (for example, a nurse care manager) to meet the model's requirements.

In response to these incentives and supports, practices could then make changes in several domains to meet care delivery requirements.

- First, they could expand access and continuity of care (for example, by offering walk-in appointments in the evenings or on the weekends).
- Second, they could provide proactive care management services for high-risk patients, including in the high-risk period right after hospital discharge and for patients who have repeated exacerbations of chronic conditions that necessitate frequent ED visits or hospital admissions.
- Third, practices could expand their level of coordination with other providers or offer more comprehensive services, such as screening for behavioral health conditions and offering brief interventions or referrals.
- Fourth, practices could improve beneficiary and caregiver experience (for example, by convening patient advisory councils and incorporating their recommendations into process improvements at the practice).
- Finally, practices could provide more proactive, planned care (for example, by using registries or team huddles to identify and then fills gaps in recommended preventive services among their patient panel).

Together, these changes in care could lead to several outcome improvements that the model targets. By helping to prevent exacerbations of chronic conditions, care management services could reduce hospital admissions and ED visits. Improvements in transitional care could increase follow-up after discharge and decrease risk of readmissions. Further, expanding access in the evenings and on weekends could reduce ED visits by providing a primary care alternative. As in the hospital pathway, these reductions in hospital use would initially translate into higher hospital margins and could support lower increases in hospital budgets required to meet savings targets. The efforts to expand coordination and comprehensiveness of services could reduce duplicative imaging and testing or the need for expensive specialty care, which, in turn, could lower non-hospital spending. The combined set of efforts to improve care, including those specifically focused on the patient experience, could improve patients' reported satisfaction with primary care.

c. The state accountability pathway

The Maryland state agencies have a strong incentive to meet the savings targets in the MD TCOC agreement because failing to do so could remove Maryland's authority to set the prices Medicare pays for hospital care in the state. Further, the Outcomes-Based Credits incentivize the state to focus on specific population health measures because success on the measures can lower the amount of financial savings the state needs to generate. Finally, through the SIHIS commitments, the state agencies have separately committed to meeting population health goals,

and whether the state succeeds could factor into CMS decisions about whether to expand the model.

Faced with these incentives, state agencies could take several steps to meet their commitments:

- *HSCRC could directly regulate growth in hospital spending to meet targets*. The MD TCOC Model adds an additional complexity to HSCRC's role in meeting savings targets. Under the MDAPM, in which targets hinged only on *hospital* spending, HSCRC could essentially guarantee that the state would meet targets. Under the MD TCOC Model, HSCRC must monitor and project growth in both hospital and non-hospital spending and adjust growth in hospital spending to make sure it meets the required savings for total cost of care.
- *HSCRC, the MDH, and other state agencies could identify new ways to support population health improvements*. This could include efforts that operate through the other two pathways (for example, by including related quality measures as part of the incentives that MDPCP practices face under the model). Alternatively, they could create new initiatives, such as grants to hospitals and community partners directly focused on improving population health.

These changes in health care financing and supports for population health could improve key model outcomes. Specifically, HSCRC efforts to limit growth in hospital spending could lead to model impacts on spending, overall and for hospital spending specifically. (Meeting targets for savings, however, does not necessarily guarantee that the model will impact spending relative to a counterfactual designed to estimate how spending in Maryland would have changed absent the model.) Further, the efforts by state agencies to set and then support improvements in population health could eventually improve population health related to preventing diabetes and drug overdoses.

d. Interactions between the pathways

These three pathways could interact in ways that help the model overall achieve its aims such as the following:

- *State actions can support practices and hospitals in care transformation*. State agencies are taking specific actions to support hospitals and primary care practices in their transformation. This includes creating CTI options for hospitals, working with CMS to develop the waivers required to permit hospitals to incentivize care partners, and providing coaching to support MDPCP practices.
- *The hospital and primary care pathways can support the state in meeting savings targets*. If hospitals and practices successfully reduce avoidable admissions and ED visits, this will help the state meet its cost and quality commitments. Specifically, these reductions will make it more feasible for HSCRC to—in a sustainable way—constrain growth in hospital budgets, if needed, to hit annual savings targets. If acute care declines, then hospital operating costs will decline, allowing hospitals to achieve similar margins even if growth in their budgets is limited.

- *Hospitals can directly support practices in care transformation*. For example, hospitals—or the systems that they are a part of—can function as CTOs to help practices succeed under MDPCP. This could help practices meet their requirements and, by reducing hospital volumes, help hospitals perform better under global budgets.

1.1.4. Potential facilitators of and barriers to intended impacts

Although the logic model describes how the model could achieve intended outcomes, an additional framework can help to identify potential facilitators and barriers to the model having its intended impacts. Before we turn to that framework, however, we first clarify what we mean by model impacts.

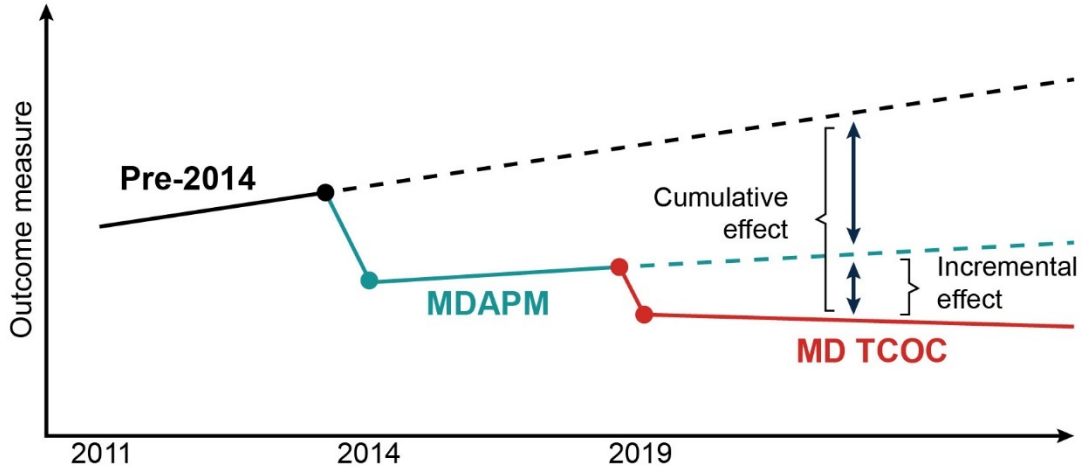
a. Definition of model impacts

We define impacts as the difference between the outcomes that occur in Maryland during the MD TCOC Model and the outcomes that would have occurred absent the model. The evaluation will eventually use a matched comparison group drawn from outside Maryland to estimate this counterfactual.

Within this broad definition, CMS is interested in two types of impacts, illustrated in Figure 1.3:

- **Cumulative effects** measure the combined effects of the MDAPM and the MD TCOC Model on outcomes. Before the MDAPM began, the outcomes in Maryland were on a certain path (illustrated by the black line in Figure 1.3). In 2014, the MDAPM introduced state accountability for hospital spending and all-payer global budgets for hospitals, shifting the outcome trajectory (the green line). In 2019, the MD TCOC Model introduced state accountability for total cost of care as well as new incentives and supports to engage a wide range of providers in transforming care. These changes shifted the path again (the red line). The cumulative effects capture the difference in outcomes between what occurred in Maryland (the red line) and the outcomes that would have occurred in Maryland if the state had stayed on its pre-MDAPM path (black dotted line).
- **Incremental effects** measure the effects of just the MD TCOC Model. Specifically, it captures the difference between actual outcomes (red line in the figure) and what would have occurred in Maryland if the state had started and continued the MDAPM but not launched the MD TCOC Model (green dotted line).

Figure 1.3. Stylized example showing incremental versus cumulative effects of the MD TCOC Model



MDAPM = Maryland All-Payer Model.

b. Potential facilitators and barriers

In general, we consider there to be at least three conditions that must be met for the MD TCOC Model to have intended impacts throughout the state, whether measured incrementally or cumulatively.

- First, there must be meaningful room to improve the targeted outcomes.
- Second, the model must reach a substantial percentage of Medicare FFS beneficiaries throughout the state (especially those for whom there is largest room for improvement).
- Third, the model must prompt genuine *changes* in how health care is delivered or financed for beneficiaries reached by the model components in ways that could improve targeted outcomes.

This simple framework suggests that these three variables can either be facilitators or barriers to the model having intended effects.

Room for improvement. All else equal, larger room for improvement could facilitate model impacts, and less room for improvement could hinder them. For the MD TCOC Model, we will need to examine room for improvement at two points in time that correspond to the two types of model impacts. For the cumulative impacts, room for improvement in 2013, right before the MDAPM began, is most relevant. For example, as we discuss in Chapter 2, there was substantial room for improvement in reducing hospital admissions in 2013, likely because of the long stretch in the early 2000s when hospitals responded to constraints on price increases by increasing volume. In 2018, after four years under the MDAPM, the opportunities for improvement might have shifted, with less room to further reduce admissions but greater opportunities to improve efficiency of non-hospital care and improve targeted population health outcomes.

Reach of the model, both for individual components and cumulatively. Model components that reach a larger share of Medicare FFS beneficiaries can, all else equal, have a larger impact on state-wide outcomes—whereas those with limited reach will have smaller impacts. For some components of the MD TCOC Model, reach is naturally near 100 percent, whereas for others, reach depends on how many providers join the programs. For example, the hospital global budgets have close to 100 percent reach because all acute care hospitals in Maryland are regulated and receive global budgets. HSCRC efforts to incentivize hospitals to change care through global budgets, or make quality adjustments to those budgets, naturally have very high reach. In contrast, the reach for MDPCP, or for episode programs (ECIP and CTIs), will depend on how many practices and hospitals, respectively, choose to participate in these programs and then how many Medicare FFS beneficiaries they serve.

Changes in care or financing. All else equal, model components that prompt genuine changes in care or financing will have larger impacts compared with components that, perhaps unintentionally, reward or incentivize care as usual. For example, one of the challenges in CPC+—which MDPCP is modeled on—is that many practices met some care delivery requirements at baseline before they joined the model. Therefore, the primary care investments supported care as usual in some areas (particularly within the access and continuity domain), rather than prompting care changes—potentially limiting the initiative's impacts. The MDPCP component will have greater impacts if the model's incentives and supports lead to genuine changes in primary care over the model period and smaller impacts if they support primary care as usual. Similarly, the model would, all else equal, have larger impacts if HSCRC constrains growth in hospital budgets more than it would without the MD TCOC Model.

We are using this simple framework to guide our collection and interpretation of data for the evaluation. For example, we use claims and other secondary data to understand room for improvement (Chapter 2) and then, within each pathway (Chapters 3 to 5), describe—to the extent possible—the reach of the model components and the degree to which the components have prompted changes in care or financing.

1.2. Goals for the evaluation and focus of this report

1.2.1. Goals for the evaluation

The goal of the independent evaluation is to assess whether the MD TCOC Model succeeds in reducing total Medicare spending while improving, or at least preserving, quality of care and population health across the state. The evaluation will link findings on model implementation to estimates of model impacts to explore the mechanisms that might drive overall model impacts as well as variation in impacts across beneficiaries, places, and time.

CMS may use the findings from the evaluation to inform its decisions about whether, and how, to expand the MD TCOC Model. Specifically, the results could inform CMS decisions about whether to (1) move the model beyond its testing phase, extending the duration of some or all of the Medicare payment and program waivers that allow the model to operate; (2) require Maryland to revise the model and establish a new model test; or (3) end the model and move Maryland to the inpatient and outpatient prospective payment systems that govern Medicare hospital payments in the rest of the country.

The methods the evaluation will use to assess the impacts of the MD TCOC Model differ from how Maryland and CMS will assess whether the model meets savings targets set in the state agreement, potentially leading to different conclusions. The evaluation defines model impacts as the difference between the actual outcomes in Maryland and the outcomes that would have occurred in the state had Maryland not started the MD TCOC Model. We will estimate this counterfactual using a matched comparison group drawn from the rest of the country. In contrast, the state agreement sets targets that are either a fixed percentage (for example, all-payer annual hospital spending growth cannot exceed 3.58 percent, the long-term growth rate for the state economy) or are relative to national spending growth (for example, Medicare spending cannot exceed national growth rates for two or more consecutive years). Although we anticipate that efforts to meet savings targets could also reduce spending relative to the counterfactual, the state could meet savings targets without *impacting* Medicare spending as we define it and vice versa.

1.2.2. Focus and organization of this report

This report describes how hospitals, primary care practices, other providers, and stage agencies have implemented the MD TCOC Model in its first two years (2019 and 2020). Specifically, we address the following research questions:

1. What room for improvement was there on cost and quality outcomes in 2018, before the MD TCOC Model began?
2. What incentives have hospitals faced under the model to improve efficiency and quality of care? To what extent have hospitals and their care partners responded to incentives by engaging in the CRP or CTIs to improve care within and outside of the hospital?
3. What primary care practices are participating in MDPCP, what supports have they received, and what changes in care have they made so far?
4. What actions have state agencies taken to meet savings targets under the model and to set, and meet, population health goals?

Although this report does not include estimates of model impacts, the findings from this report should help us and CMS interpret future estimates of model impacts.

To address these research questions, we collected and analyzed data from a variety of sources.

- **Interviews.** We interviewed officials at CMS and Maryland state agencies to understand the logic of the MD TCOC Model and to identify actions the state is taking to meeting savings targets and to develop and meet health care quality and population-health goals.
- **Medicare Part A and B claims data.** We used these data to measure Medicare spending, hospital admissions, and other outcomes before the model began (2018) in Maryland and the rest of the country to help identify Maryland's room for improvement on these outcomes at baseline.
- **Implementation datasets from CMS and HSCRC.** From CMS and its model implementation contractor, these datasets included information on which practices have participated in MDPCP, the financial and other supports they have received, and the care changes that practices reported in a quarterly survey uploaded via a web-based portal. CMS also provided data on the formal CRP tracks, including which hospitals participated, the

organizations and providers the hospitals partnered with, whether hospitals offered and paid incentives to partners, and the types of interventions the hospitals and their partners delivered. From HSCRC, the data included which hospitals plan to participate in different Care Transformation Initiatives and the margins hospitals experienced under the model.

Although we planned to conduct extensive interviews with hospitals, primary care practices, and other providers, these interviews were not possible because of the COVID-19 pandemic. We plan to conduct a full set of interviews in the future.

We organized this report based on the logic model (Chapter 1.1.3). After describing room for improvement at baseline (Chapter 2), we describe model implementation for each of the three pathways (Chapters 3 to 5), including the reach of the components and any care changes observed thus far. The final chapter briefly summarizes findings and describes next steps for the evaluation.

Chapter 2. Room for Improvement on Cost, Service Use, and Quality Measures at the Start of the MD TCOC Model

Key takeaways

- In 2018, before the MD TCOC Model began, there was substantial opportunity to reduce Medicare spending for hospital and non-hospital services.
  - After adjusting for differences across states in demographics and beneficiary health status, Maryland had the highest per-capita Medicare spending in the nation, the second-highest hospital spending, and the seventh-highest non-hospital spending.
  - The high hospital spending was driven by high prices, not high utilization.
  - Moving Maryland to the 90th percentile of hospital spending in the country would substantially reduce Medicare spending (by about 5 percent) in the state.
- Non-hospital spending grew faster in Maryland than in the rest of the nation from 2013 to 2018, likely in part because of incentives under the MDAPM to move care from the hospital to non-hospital settings.
- Maryland had greater improvements in measures of hospital and health-system performance than the rest of the nation from 2013 to 2018, likely reflecting successes during the MDAPM. These improvements included substantially faster declines in hospital admission rates, 30-day unplanned readmissions, and potentially preventable admissions (a measure of ambulatory care quality) in Maryland compared with the rest of the nation. For example, Maryland fell from the 7th-highest state in admission rates in 2013 to the 34th-ranked state in 2018. Further, rates of timely follow-up after acute exacerbations of chronic conditions increased more in Maryland than in the rest of the nation.
- In 2018, there was also meaningful room to improve population health outcomes that the MD TCOC Model targets. The prevalence of diabetes and obesity as well as the mean BMI among Maryland residents increased in Maryland from 2013 to 2018, and they were near national averages at the start of the MD TCOC Model.

2.1. Overview

This chapter describes room for improvement on key spending, service use, and quality outcomes for Medicare FFS beneficiaries that the MD TCOC Model aims to improve. We anticipate model impacts will be larger for outcomes that have more room to improve at baseline. We focus on 2018, right before the MD TCOC Model began. For context, however, we also measure room for improvement in 2013, before the MDAPM began. Although there is no single best way to assess room for improvement, we did so largely by comparing Maryland's outcomes with those in other states, adjusting the populations in other states to match the distribution found in Maryland in terms of sex, age, disability status, and health status (as captured by Hierarchical Condition Category [HCC] score; see Appendix A for details). When possible, we also integrated assessments by the HSCRC and MDH of room for improvement on key outcomes.

In summary, we find that, in 2013 and 2018, Maryland had substantial room to reduce Medicare FFS spending and meaningful room to improve targeted population health measures. There was less room for improvement on select utilization and quality measures in 2018 than there was in in 2013, though there remains considerable opportunity for many outcomes (Table 2.1).

Table 2.1. Room for improvement was generally higher in 2013, before the MDAPM began, but still existed for many key outcomes in 2018 at the start of the MD TCOC Model

Domain	Outcome	Room for improvement (and Maryland rank among all 50 50 states)	
		In 2013 (before MDAPM began)	In 2018 (before MD TCOC began)
Spending	Total Part A and B spending	**Very high (1st)**	**Very high (1st)**
	Hospital spending	**Very high (1st)**	**Very high (2nd)**
	Non-hospital spending	Medium (11th)	**High (7th)**
Utilization	Hospital admissions (all-cause)	**High (7th)**	Medium (34th)
	Outpatient emergency department visits	Medium (39th)	**Low (41st)**
Quality	Potentially preventable hospital admissions	Medium (14th)	Medium (32nd)
	Unplanned 30-day hospital readmission rate	**Very High (2nd)**	Medium (23rd)
	Timely follow-up after acute exacerbations of chronic conditions	Medium (37th)[a]	Medium (31st)[a]
	Patient satisfaction with primary care	**Low (n.a.)[b]**	**Low (n.a.)[b]**
Population health	Diabetes prevalence, residents ages 45–74	Medium (36th)	Medium (30th)
	Obesity prevalence, ages 45–74	Medium (28th)	Medium (28th)
	BMI, ages 45-74	Medium (26th)	Medium (27th)

Note: For all measures except timely follow-up after acute exacerbations of chronic conditions, patient satisfaction with primary care, and BMI, a lower ranking implies more room for improvement. We defined room for improvement based on ranking as following: Rank 5 or lower = Very high (dark green), Rank 5 to 10 = High (green), Rank 10 to 40 = Medium (light green), Rank 40 or higher = Low (red). The rankings are based on values after we weighted Medicare FFS beneficiaries in each state to match the distribution found in Maryland in terms of sex, age, disability status, and health status (as captured by Hierarchical Condition Category score).

Table 2.1 *(continued)*

[a] For this measure, a lower ranking implies less room for improvement. Maryland's movement from 37th to 31st percentile from 2013 to 2018 suggests that Maryland increased its rate of follow-up more than other states, a success during the MDAPM period that leaves less room for improvement after it.

[b] The values for Maryland and all other states all fell between 89 and 91. There is little room for improvement on this measure for any state, and the relative rankings of states are not particularly meaningful given the small spread across states.

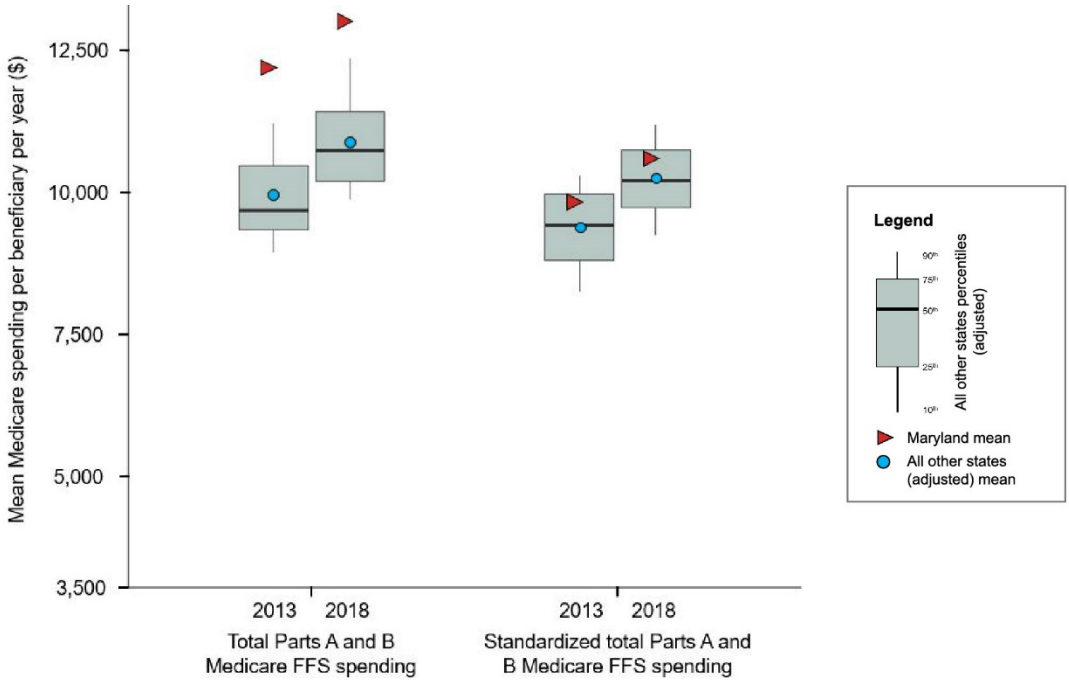
BMI = body mass index; FFS = fee for service; MDAPM = Maryland All-Payer Model; n.a. = not applicable.

2.2. Medicare spending

Overall, there is substantial room to decrease total Medicare spending. In 2018, total Medicare Part A and B spending per beneficiary in Maryland ($13,037) was the highest in the nation (Figure 2.1). If spending fell to the 90th percentile across states, total spending would decline by about 5 percent, and if it decreased to the 75th percentile, spending would drop by about 12 percent. When CMS designed the savings targets for the MD TCOC Model, it envisioned that the model would eventually bring per capita Medicare FFS spending in Maryland to about the 90th percentile across states.

The considerable opportunity for improvement in 2018 exists despite slower growth in Medicare spending in Maryland versus the rest of the country during the MDAPM. The gap in total Medicare spending per capita between Maryland and the fifth-highest (or 90th percentile) state shrank from $948 per person in 2013 to $626 in 2018, indicating important gains during the MDAPM but also further opportunity for improvement.

Figure 2.1. There is considerable opportunity for reductions in total Medicare Part A and Part B spending under the MD TCOC Model



Source: Mathematica's analyses of Medicare enrollment and claims data.

Figure 2.1 ***(continued)***

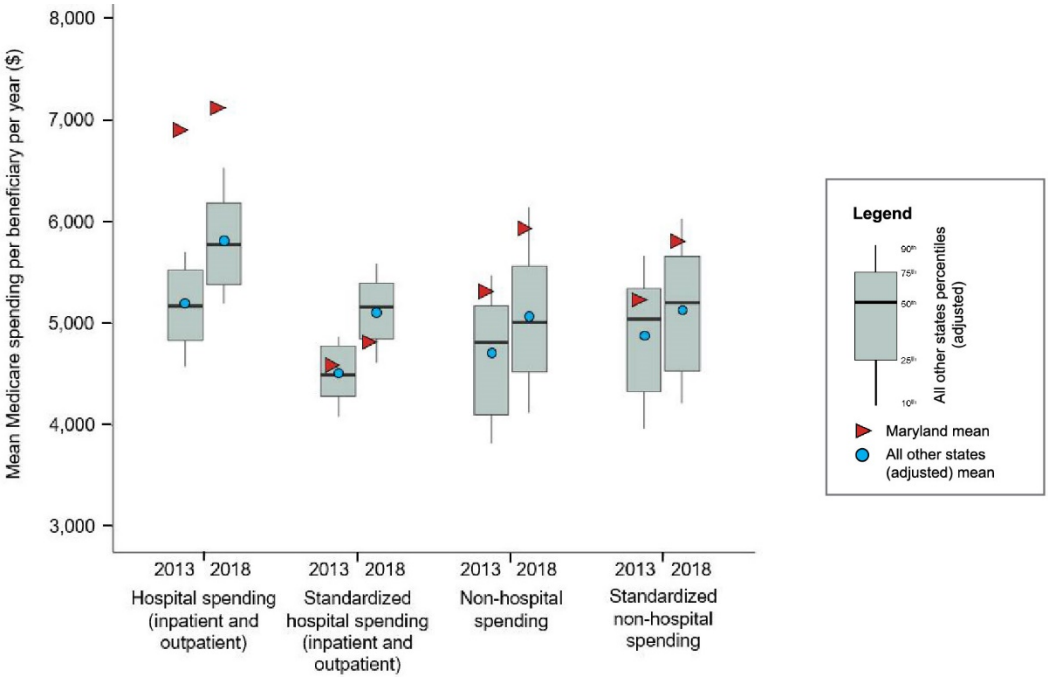
Note: We adjusted actual and standardized spending in each state to match the age, sex, disability, and HCC score distribution of Maryland FFS beneficiaries. Actual spending is the amount that Medicare spent on medical care for Medicare beneficiaries, which is partly driven by area wage indices and other local market factors (and, in Maryland, in part by rates that HSCRC sets for hospital spending). Standardized spending, in contrast, gives a common price for all services, removing the influence of area wage indices, local market factors, and HSCRC rate setting on spending.

FFS = fee for service; HCC = Hierarchical Condition Category; HSCRC = Health Services Cost Review Commission.

The largest opportunity for improvement appears to be in reducing hospital spending (Figure 2.2). In 2018, average hospital spending for Medicare FFS beneficiaries in Maryland was the second highest in the nation (only Alaska had higher average hospital spending). The major factor driving high hospital spending in Maryland is the relatively high price Medicare pays per stay. The intensity of hospital service use was similar in Maryland as it was in the rest of the country in 2013, and lower than the national average in 2018, as indicated by standardized hospital spending. Standardized spending removes differences across states because of differences in hospital prices (for example, those attributable to wage indices or HSCRC rate setting), so it measures intensity of hospital service use in aggregate. Standardized hospital spending in Maryland was a bit below average in 2018. That standardized hospital spending in Maryland was below the national average but actual spending was much higher indicates that higher prices in Maryland drive the hospital spending differences.

Higher hospital prices in Maryland are expected and an inherent feature of a rate-setting system that sets similar payment rates across payers. In most of the country, commercial payers pay higher rates for hospital care than public payers (Medicare or Medicaid) (MedPAC 2020). In Maryland, by setting a nearly uniform rate across payers, public rates are higher than in the rest of the country, but commercial rates are lower (Haber et al. 2018). In Maryland, HSCRC intends to maintain a somewhat higher Medicare price per stay (compared with the rest of the country) but still drive down hospital spending per person largely by decreasing the volume of hospital services. Lower volume at somewhat higher rates could then lead to Medicare spending more in line with peer states. In practice, HSCRC would accomplish this decline in hospital spending by lowering growth in hospital budgets, which naturally combine both prices and volumes to set budget amounts.

Figure 2.2. There is substantial room for reduction in total hospital and non-hospital spending, but especially hospital spending, under the MD TCOC Model



Source: Mathematica's analyses of Medicare enrollment and claims data.

Note: We adjusted actual and standardized spending in each state to match the age, sex, disability, and HCC score distribution of Maryland FFS beneficiaries. Actual spending is the amount that Medicare spent on medical care for Medicare beneficiaries, which is partly driven by area wage indices and other local market factors (and, in Maryland, in part by rates that HSCRC sets for hospital spending). Standardized spending, in contrast, gives a common price for all services, removing the influence of area wage indices, local market factors, and HSCRC rate setting on spending.

FFS = fee-for-service; HCC = Hierarchical Condition Category; HSCRC = Health Services Cost Review Commission.

There is also substantial room to reduce non-hospital spending in Maryland, one of the new target areas under the MD TCOC Model. In 2018, Maryland ranked 7th across states in the broad category of non-hospital spending, whereas the state ranked 11th in 2013. Because services were expected to move from the hospital to a community setting under the MDAPM, this increase in rank, or relative increase in non-hospital per capita spending from 2013 to 2018, is likely—at least in part—a result of the incentives under the MDAPM. If Maryland were to fall to the 75th percentile, non-hospital spending would decrease by 6 percent, and if it were to fall to the 50th percentile, non-hospital spending would decrease by 9 percent. The two areas in which non-hospital spending is particularly high are imaging and specialty services—for both service types, Maryland's spending exceeds the 90th percentile (see Table A.1). Although reducing imaging or specialty care is not a primary focus of MDPCP, efforts to make primary care more comprehensive and to coordinate care across settings could potentially reduce duplicative imaging or the need for expensive specialty services.[13] Through its episode-based programs, the MD TCOC Model also aims to lower post-acute care spending. There does appear to be some room for improvement in

[13] Because Medicare FFS has an open-network policy, it might be challenging for primary care providers to direct patients to more efficient specialty services. Further, MDPCP could increase spending for specialty care for some patients if proactive care management services identify need for specialty care.

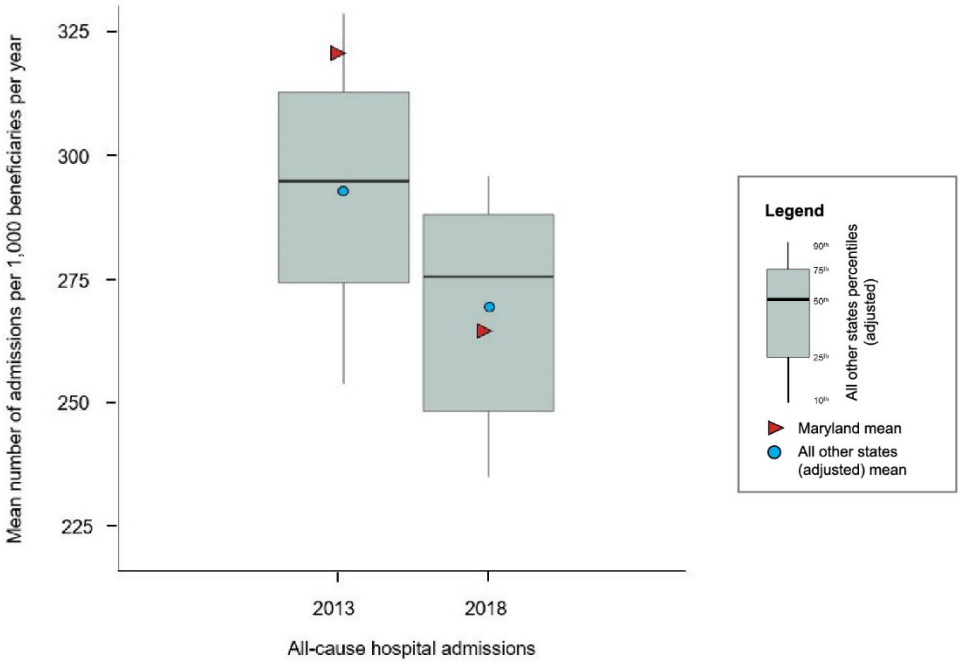
these areas as well, with spending on skilled nursing facilities and home health (Part A) modestly above the national averages (Table A.1). Increased spending for home health (Part A) as a substitute for skilled nursing care, however, might be a positive development because it is typically less costly for Medicare. Further, we acknowledge that spending for post-acute care in Maryland relative to the rest of the nation might differ because of historical differences in the use of post-acute care between Maryland and other states.

2.3. Health system utilization and quality measures

The following graphs describe changes in Medicare-covered hospital use overall (all-cause admissions and outpatient ED visits) as well as for select quality measures (potentially preventable admissions, 30-day unplanned readmissions, receipt of timely follow-up after acute exacerbations, and non-emergent or primary-care-treatable outpatient ED visits). Although these measures appear hospital-focused, each of these measures also reflects the quality of, and access to, community-based ambulatory care (for example, access to care coordination services that can prevent hospitalizations) as well as the quality of hospital care.

Overall, there appears to be modest but meaningful room for reducing Medicare-covered hospital admissions and readmissions because of significant improvements during the MDAPM (Figures 2.3 and 2.4). At the start of the MDAPM, the state had Medicare-covered all-cause hospital admission and 30-day unplanned readmission rates that were above the 75th percentile across states, indicating substantial room for improvement. But all-cause hospital admission rates fell substantially faster in Maryland from 2013 to 2018 (by 17 percent) than they did in the rest of the country (8 percent). This faster decline meant that, by 2018, Maryland had fallen to about the 40th percentile across states. Similarly, unplanned readmission rates for Medicare-covered stays fell faster in Maryland during the MDAPM period than in the rest of the country. Improved coordination between hospitals and community-based providers likely played a role in reducing readmissions. There is still meaningful room for improvement in admissions and readmissions because Maryland anticipates that—with global budget incentives—its hospital admission rates could go well below the average among states. For example, if Maryland's hospitalization rate fell to the 25th percentile across states, it would fall by another 6 percent. Further, HSCRC recently set a goal of reducing readmission rates across all payers (not only Medicare) by 7 percent over five years (HSCRC 2020b).

Figure 2.3. Maryland reduced all-cause admissions more than the rest of the nation from 2013 to 2018, suggesting that additional improvement might be more challenging to achieve

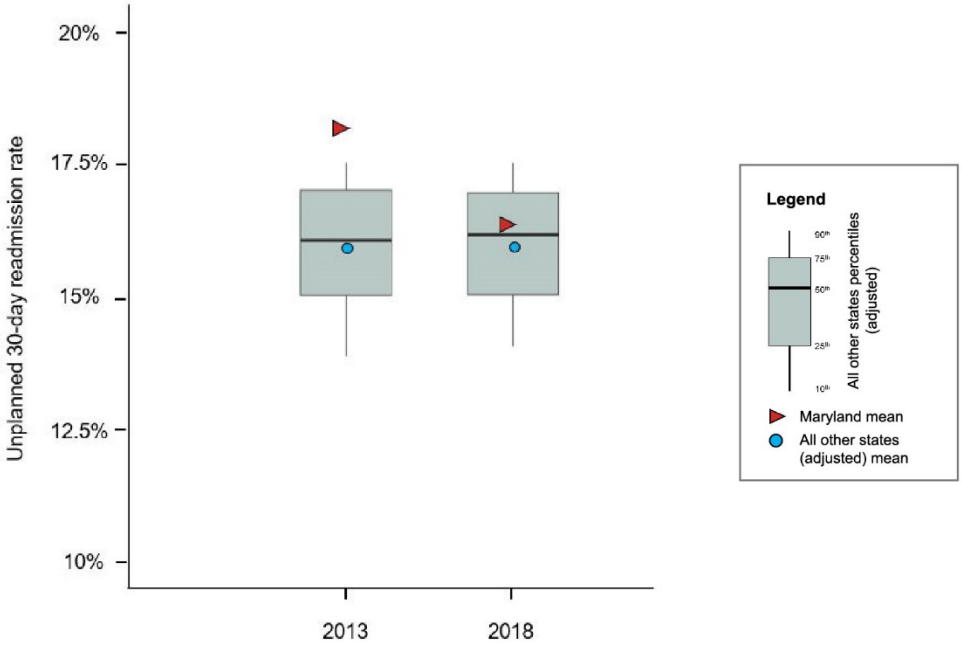


Source: Mathematica's analyses of Medicare enrollment and claims data.

Note: We adjusted admission rates in each state to match the age, sex, disability, and HCC score distribution of admissions in Maryland.

HCC = Hierarchical Condition Category.

Figure 2.4. Maryland reduced 30-day unplanned readmissions rates more than the rest of the nation from 2013 to 2018, but rates are still above the average, suggesting there is still room for improvement



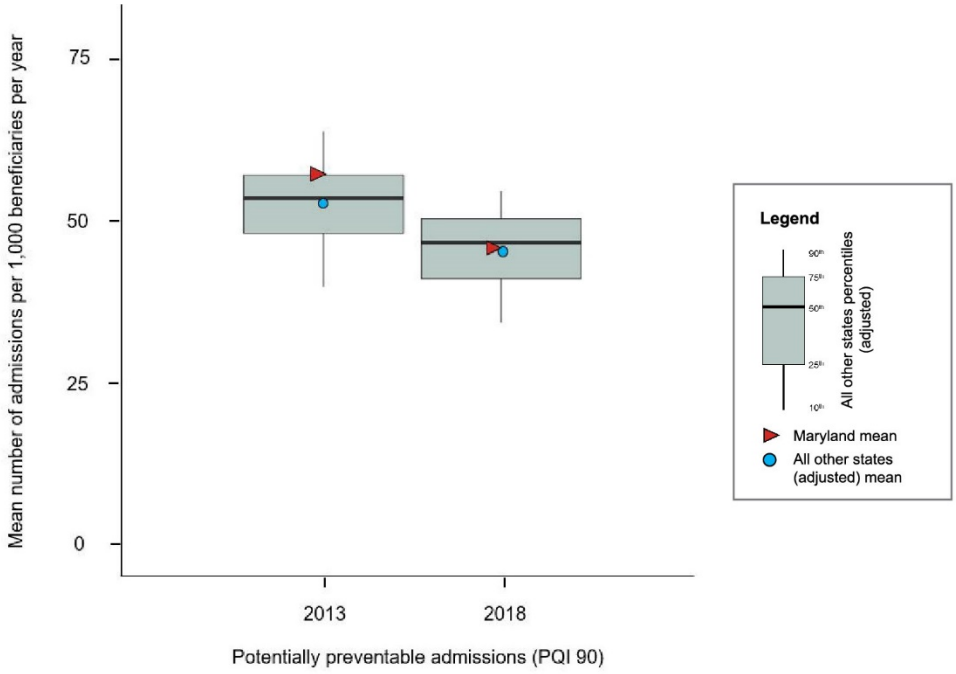
Source: Mathematica's analyses of Medicare enrollment and claims data.

Note: We adjusted readmission rates in each state to match the age, sex, disability, and HCC score distribution of admissions in Maryland.

HCC = Hierarchical Condition Category.

Another way to reduce overall hospital admissions is by decreasing hospital admissions that are potentially preventable, as defined by the Agency for Healthcare Research and Quality's Prevention Quality Indicators (PQIs). These are hospitalizations that could potentially be prevented with better ambulatory care, either by preventing or slowing the progress of diseases or by preventing acute exacerbations of existing chronic diseases (AHRQ 2021). PQI admissions decreased faster in Maryland from 2013 to 2018 than in the rest of the nation (Figure 2.5), further suggesting improved ambulatory care during this period. Almost 20 percent (46 of 265 hospital stays per 1,000 beneficiaries per year) of all hospital stays in Maryland in 2018, however, met this potentially preventable definition. This finding suggests further room for improvement in reducing admissions in the state by improving ambulatory care. Indeed, one of the SIHIS goals is to reduce PQI admissions by 25 percent by 2026 (HSCRC 2020l). MDH leaders also see reducing PQI admissions as a key way that MDPCP can help the MD TCOC Model meet its overall objectives of reducing Medicare spending.

Figure 2.5. PQI admissions decreased more in Maryland than in the rest of the nation from 2013 to 2018, though the state still performs about average in 2018, suggesting additional room for improvement.



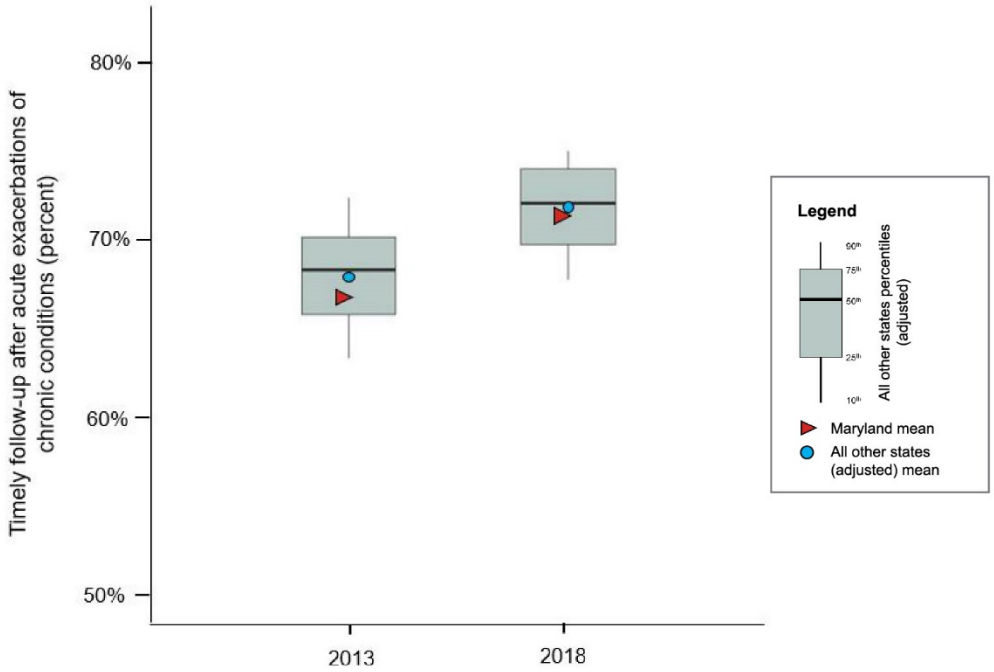
Source: Mathematica's analyses of Medicare enrollment and claims data.

Note: We adjusted rates of PQI admissions in each state to match the age, sex, disability, and HCC score distribution of admissions in Maryland. We measured PQIs using the Prevention Quality Overall Composite (PQI 90) (Agency for Healthcare Research and Quality 2019).

HCC = Hierarchical Condition Category; PQI = Prevention Quality Indicator.

Higher rates of follow-up after acute exacerbations of chronic conditions indicate better health system performance because it suggests better coordination and communication between hospitals, community-based providers, and beneficiaries. Maryland's performance on this metric improved slightly faster than that of the rest of the nation from 2013 to 2018. There is additional room for improvement on this measure, however, in Maryland and in other states. By 2018, Maryland and the nation had mean follow-up rates of about 71 and 72 percent, respectively, suggesting that nearly one-third of Medicare beneficiaries with qualifying hospitalizations or ED visits did not receive timely follow-up (Figure 2.6).

Figure 2.6. Despite gains in Maryland from 2013 to 2018, there is additional room for improvement in timely follow-up after acute exacerbations of chronic conditions



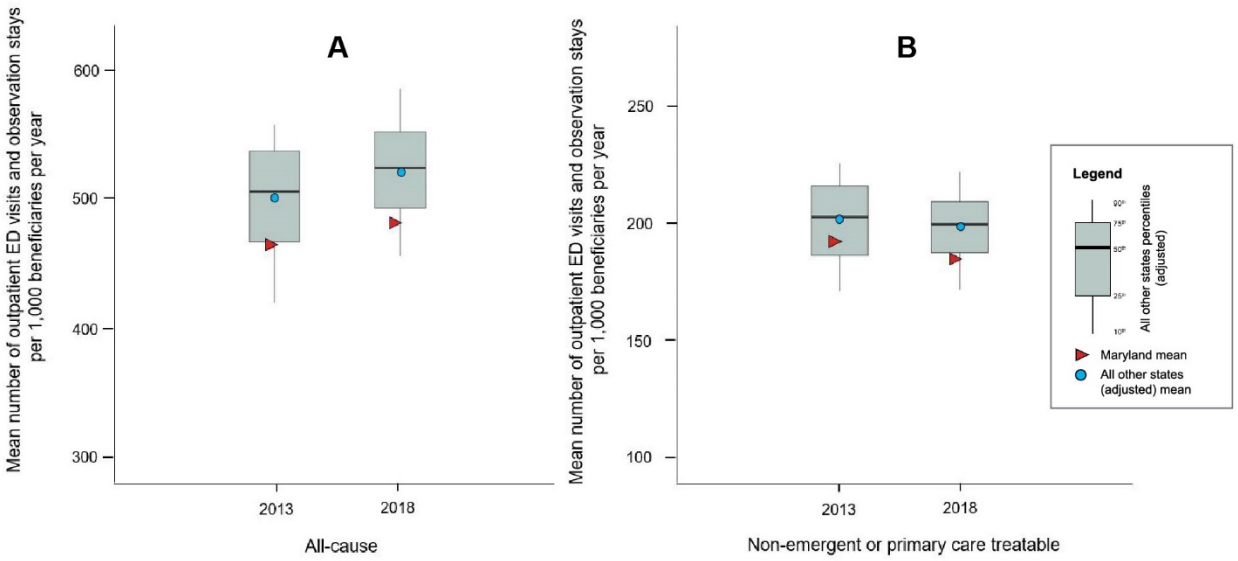
Source: Mathematica's analyses of Medicare enrollment and claims data.

Note: We adjusted the set of inpatient admissions and outpatient ED visits that qualify for this measure in each state to match the age, sex, disability, and HCC score distribution of the set of qualifying inpatient stays and ED visits in Maryland.

ED = emergency department; HCC = Hierarchical Condition Category.

In contrast, there appears to be minimal room for improvement in reducing Medicare outpatient ED visits (Figure 2.7). Maryland's rates in 2013 and 2018 were already below the 25th percentile, indicating that the state was consistently performing well on this measure relative to other states throughout the analysis period. Yet almost 40 percent of ED visits in 2018 were considered non-emergent or primary care treatable (184 of the 481 per 1000 all-cause ED visits), according to an algorithm developed by New York University (Johnston et al. 2017). That algorithm identifies the likelihood that an ED visit is preventable because it is either not a medical emergency (non-emergent) or it is but could be treated in a primary care setting rather than the ED (primary care treatable). The results in Maryland show that some of the Medicare-covered ED visits in Maryland could still be reduced, and these reductions would make Maryland an even better performer—relative to the other states—than it is already (Figure 2.7).

Figure 2.7. Maryland had relatively low rates of ED use compared with other states in 2013 and 2018, suggesting marginal room for improvement



Source: Mathematica's analyses of Medicare enrollment and claims data.

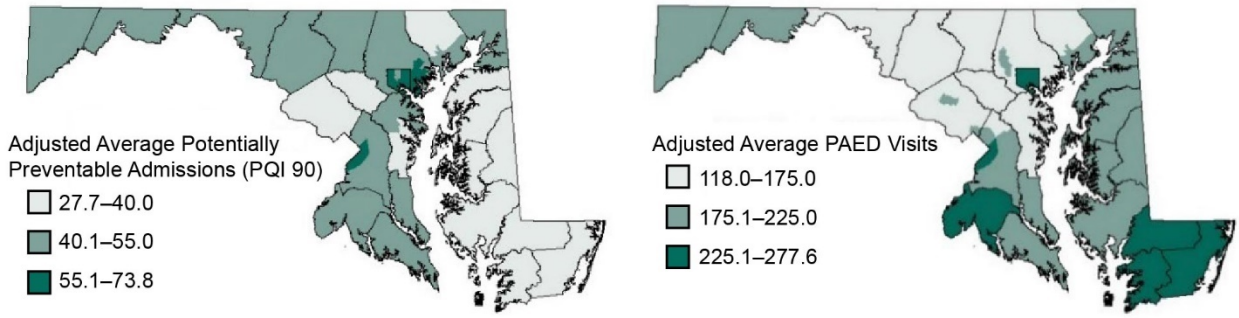
Note: We adjusted rates of all-cause and non-emergent and primary care treatable outpatient ED visits and observation stays in each state to match the age, sex, disability, and HCC score distribution of Maryland FFS beneficiaries. We measured non-emergent and primary care treatable outpatient ED visits and observation stays using the most recent update to the New York University algorithm (Johnston et al. 2017).

ED = emergency department; HCC = Hierarchical Condition Category.

Maryland's regions, which are defined by Public Use Microdata Areas (PUMA), vary substantially in their rates of potentially preventable admissions and non-emergent or primary-care-treatable ED visits among Medicare beneficiaries, suggesting reducing some of that variation can improve the state's performance (Figure 2.8).[14] The regions with the highest potentially preventable hospital rates in 2018 were about two times higher than the lowest regions and had non-emergent or primary care treatable ED visits that were about 80 percent higher than the lowest regions. In addition, regions that performed well on PQI hospitalizations in 2018 were not necessarily the same regions that performed well on non-emergent or primary care treatable ED visits and vice versa (Figure 2.8), though this could reflect differences in regional access to inpatient and outpatient ED care as well as primary care.

[14] PUMAs, defined by the U.S. Census Bureau, are built on census tracts and counties and contain at least 100,000 people. There are 44 PUMAs in Maryland; they break larger counties such as Baltimore (a county equivalent) into multiple PUMAs and combine sparsely populated counties into a single PUMA to help ensure that any statistics calculated for this population are reliable.

Figure 2.8. Outcomes varied within Maryland in 2018, but regions with high potentially-preventable admissions generally did not overlap those with high potentially-preventable outpatient ED use, indicating some variation might be because of differential access to inpatient and outpatient care across the state



Source: Mathematica's analyses of Medicare enrollment and claims data.

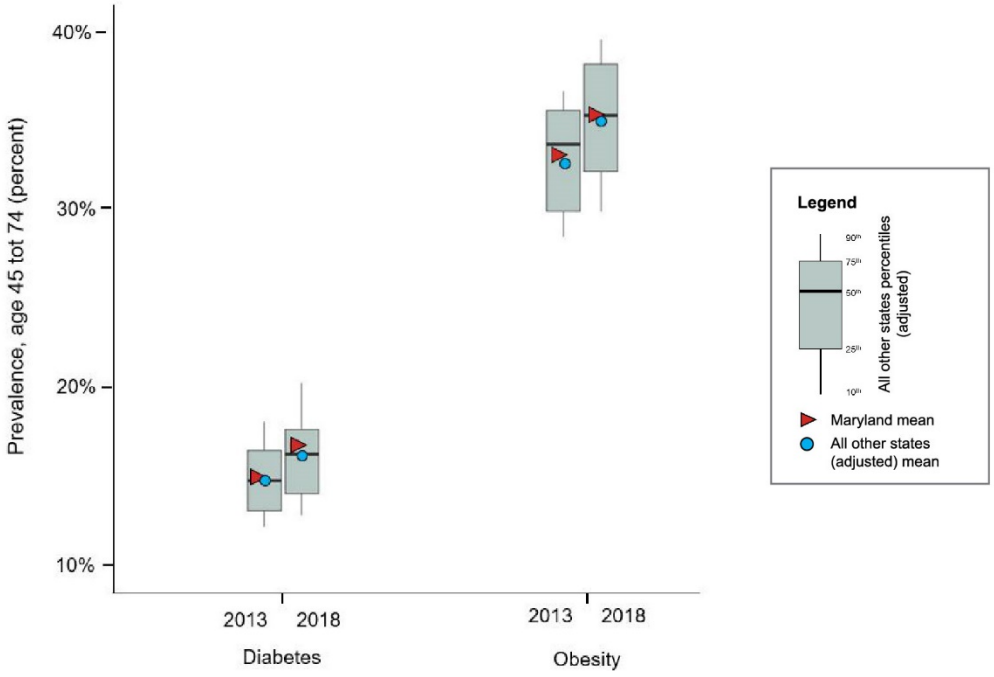
Note: We adjusted rates of potentially preventable hospitalizations (PQIs) and non-emergent and primary care treatable outpatient ED visits and observation stays in each PUMA to match the age, sex, disability, and HCC score distribution of the overall Maryland FFS beneficiaries. PQI-90 is a composite measure combining preventable hospitalizations because of acute conditions (for example, for pneumonia) and complications of chronic conditions (for example, complications from diabetes).

ED = emergency department; HCC = Hierarchical Condition Category; PAED = potentially avoidable ED visits or observation stays (non-emergent and primary care treatable); PQI = Prevention Quality Indicator; PUMA = Public Use Microdata Area.

2.4. Patient satisfaction and population health

Most Medicare beneficiaries report satisfaction with their primary care provider in Maryland and other states, suggesting minimal room for improvement on this outcome. There was a 2-percentage-point difference between the 10th and 90th percentile states' composite scores for patient satisfaction with their primary care provider in 2018 (89.0 versus 91.3 on a scale of 100), and Maryland fell at just about the average across states (Table A.1). The percentage of adults with obesity and diabetes in Maryland in 2018 (35 percent and 17 percent, respectively) was similar to the midpoint of the other 49 states and the District of Columbia, suggesting room for improvement on both measures (Figure 2.9). If Maryland reduced obesity and diabetes rates to the 25th percentile, obesity rates would fall from 35 to 32 percent, a relative decline of about 9 percent, and diabetes rates would fall from 17 to 14 percent, a relative decline of 18 percent. Although sustained weight loss can be hard to achieve for individuals and populations, it is conceivable that Maryland could reduce obesity and diabetes below the 25th percentile.

Figure 2.9. Maryland had rates of diabetes and obesity that were similar to or just above the mean of the nation in 2013 and 2018, suggesting room for improvement



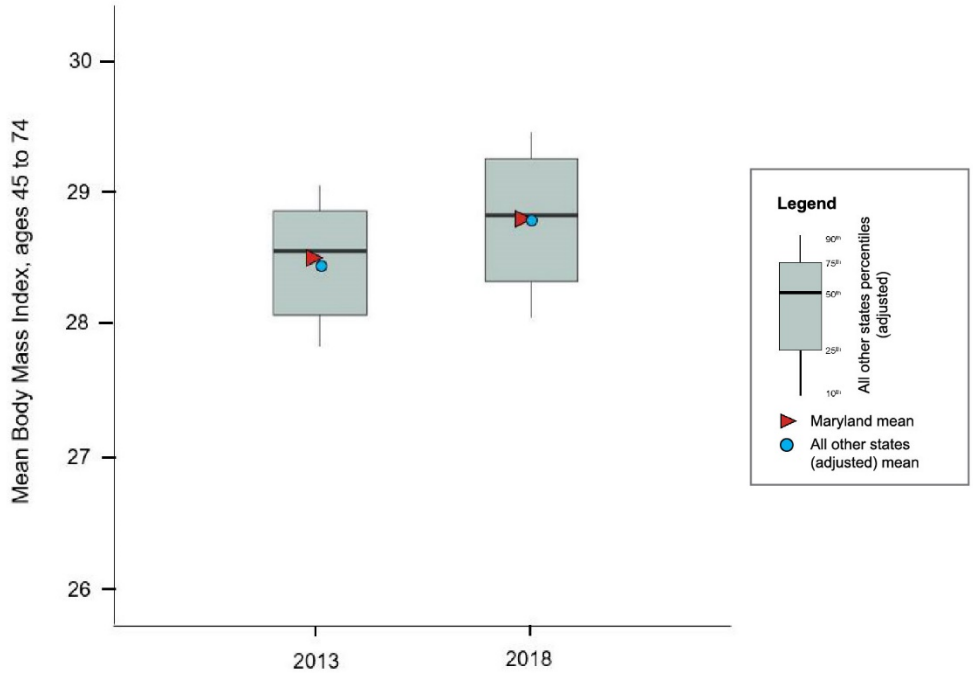
Source: Mathematica's analyses of BRFSS data, adults ages 45 to 74.

Note: We adjusted measures of diabetes and obesity prevalence in each state to match the age and sex distribution of Maryland BRFSS respondents.

BRFSS = Behavioral Risk Factor Surveillance System.

Mean BMI was high in Maryland and the nation in 2013 and 2018. One of SIHIS's goals is to reduce mean BMI in the population of adult Maryland residents. There appears to be ample room for improvement on this measure, even beyond the levels of the top-performing states. Adults in the normal or healthy weight category have BMI between 18.5 and 24.9 (Centers for Disease Control and Prevention 2020). In 2018, however, the 10th percentile state had a mean BMI of 28.0, suggesting that even the best-performing states had high rates of overweight and obese adults. The 90th percentile state had a mean BMI of 29.5 in 2018. Maryland performed just about average in both 2013 and 2018 (Figure 2.10).

Figure 2.10. There is ample room for improvement in mean BMI in Maryland and the rest of the nation



Source: Mathematica's analyses of BRFSS data, adults ages 45 to 74.

Note: We adjusted mean BMI in each state to match the age and sex distribution of Maryland BRFSS respondents.

BMI = body mass index; BRFSS = Behavioral Risk Factor Surveillance System.

Chapter 3. Model Implementation: Hospital and Care Partner Pathway

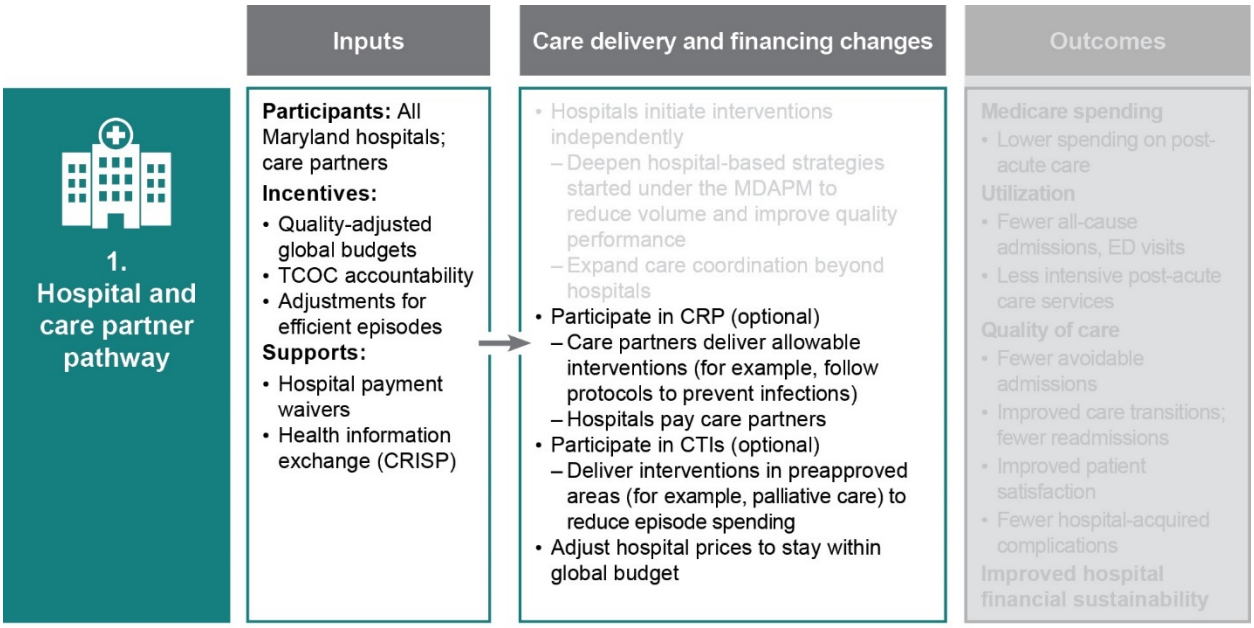
Key takeaways

- Global budgets provided the strongest incentive in the MD TCOC Model for hospitals to transform care in 2019.
  - Because hospitals still charge all payers (including Medicare) per service, they can increase their prices when volume declines—so that volume times price equals their budget.
  - In 2019, hospitals on average increased their prices by 5 percent because of volume declines they achieved in that year or earlier years.
  - These price increases were 10 times larger than the changes in revenues from individual quality incentives earned by hospitals in 2019.
- Although individual hospital incentives to improve quality are relatively small, they are important because they complement global budgets or limit risk of stinting on care.
- The new incentives for hospitals and their partners to reduce total cost of care (overall or for specific episodes) so far have been modest.
- Most hospitals (77 percent) participated in HCIP in 2019, reaching almost a third of Medicare discharges, but participation waned in 2020.
  - This program, one of the two tracks in the CRP, allows hospitals to pay in-hospital physicians for interventions they deliver to improve the quality and reduce the cost of hospital care.
  - Most hospitals, however, did not plan to offer incentives, suggesting other reasons for participation (for example, to access claims data or to qualify providers for the 5 percent bonus under the CMS Quality Payment Program).
  - In 2020, participation declined substantially, but those that remained planned to distribute payments to partners, suggesting they were using the program as envisioned.
- In 2019, almost a third of hospitals participated in ECIP, a bundled payment program for episodes of care, reaching about 3 percent of discharges in the state.
  - In this program, the second track in the CRP, most hospitals partnered with post-acute care facilities to improve care and reduce episode spending.
  - Hospitals and their partners typically delivered interventions to enhance coordination with post-acute providers and to standardize care.
- About 83 percent of hospitals plan to participate in CTIs starting in 2021.
  - In this episode program, hospitals can define their episode type and interventions.
  - Participation in CTIs should substantially surpass participation in HCIP or ECIP. These initiatives could be a key mechanism to control total cost of care.

3.1. Focus of this chapter

This chapter focuses on how hospitals and their care partners implemented the model in 2019 and 2020, using the logic model for this path as a guide (Figure 3.1). We describe the hospitals in Maryland, the size of the incentives they faced, their participation in the CRP, and their planned participation in CTIs. To describe implementation, we analyzed CRP and CTI program data that hospitals submitted to CMS or Maryland. We cannot yet describe care delivery changes that hospitals made outside the CRP or CTI programs, however, because hospitals do not submit data on these efforts, and we cannot yet collect primary data from hospitals (because of the COVID-19 pandemic).

Figure 3.1. Logic of the hospital and care partner pathway



Note: In this chapter, we focus on the parts of the model logic that are not shaded gray in the figure.

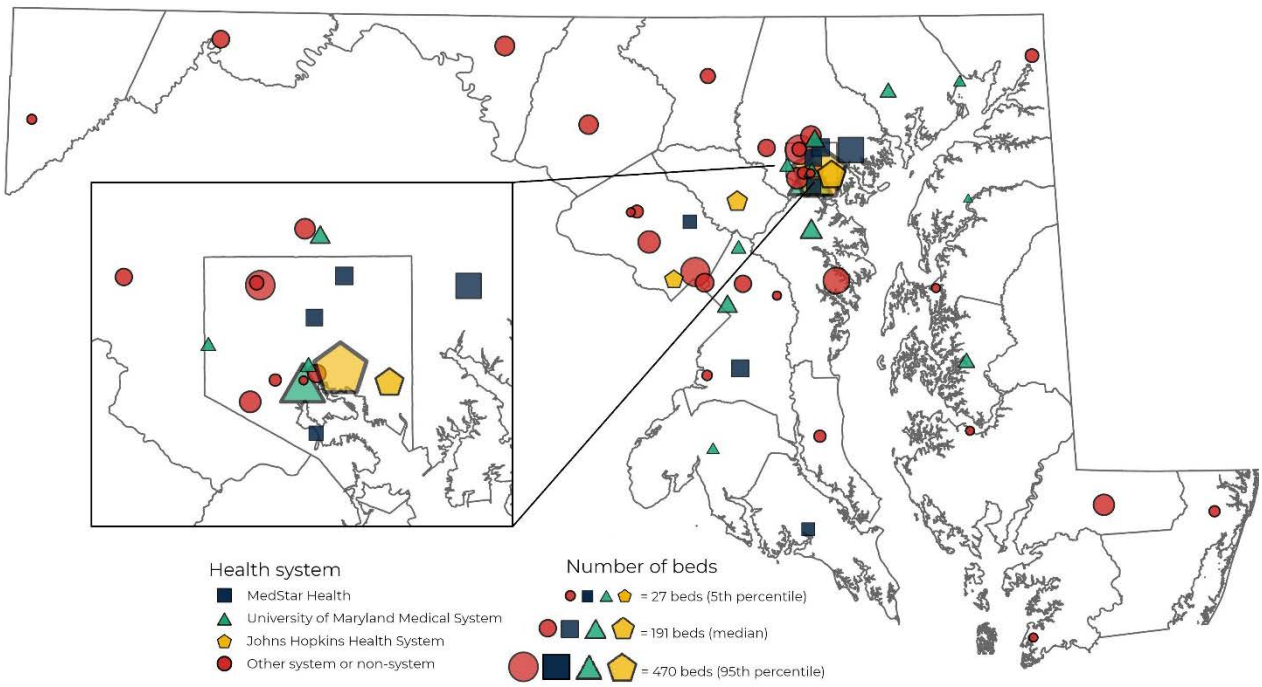
APM = All-Payer Model; CRISP = Chesapeake Regional Information System for our Patients; ED = emergency department; CRP = Care Redesign Program; CTI = Care Transformation Initiative; TCOC = Total Cost of Care.

3.2. Characteristics of hospitals participating in the model

Almost all hospitals in Maryland are covered under the MD TCOC state agreement, which continues the global budgets that started under the MDAPM and introduces new incentives to transform care. Of the 62 hospitals in Maryland, 52 are in the state agreement and covered by all-payer global budgets with net regulated revenue (from all payers) of about $15 billion annually (see Appendix B for a list of hospitals). The agreement primarily includes short-term acute care hospitals, but it also includes some freestanding emergency rooms or specialty facilities. The state agreement excludes federal hospitals, children's hospitals, and some specialty hospitals, for which HSCRC does not set Medicare payment rates.

A few large health systems own or manage most hospitals in the state and therefore have a large influence on how hospitals implement the model (Figure 3.2).[15] In 2019, the three largest health systems accounted for 51 percent of all Medicare discharges in the state: MedStar Health, University of Maryland Medical System, and Johns Hopkins Health System. The decisions by these few systems about how to respond to model incentives and which programs to participate in will therefore have a large influence on statewide outcomes. Systems often implemented components of the MD TCOC Model across their affiliated facilities and providers.

Figure 3.2. A few large health systems in Maryland account for most of the state's hospital care



Source: Agency for Healthcare Research and Quality 2018 Compendium of US Health System 2018 Hospital Linkage file. The compendium defines a system as at least one hospital and at least one group of physicians that provide comprehensive care that are connected through common ownership or joint management.

Note: N = 52 hospitals.

3.3. Size of the incentives that hospitals faced under the model to transform care

To understand the size of the financial incentives that hospitals faced under the model in 2019, we described each of the major types of incentives on two dimensions: potential (that is, how much a hospital could, in theory, gain or lose by performing well or poorly) and realized (that is, how much hospitals actually did gain or lose based on performance in 2019) (Table 3.1). We consider the strength of incentives to increase as the spread between gains and losses, both potential and realized, increases. We anticipate that, all else equal, hospitals will respond more to

[15] Following the Agency for Healthcare Research and Quality Compendium, we define a health system as at least one hospital and at least one physician group (that provides comprehensive services) connected via common ownership or management.

stronger incentives. Other key factors, however, will influence whether and how a hospital responds, including: (1) how aware hospitals are of the incentives and the actions they need to take to earn them, (2) the cost of any interventions required to perform well, (3) the potential synergy across incentives (for example, does performing well on one incentive likely mean the hospital would also perform well on another), and (4) alignment of incentives with the hospital's overall goals and mission.

Table 3.1. Global budgets represented the largest incentive for hospitals to transform care as measured by the potential and realized gains and losses in 2019

	Potential incentives[a]			Realized incentives[a]		
Incentive	Max allowable price decrease	Max allowable price increase	Difference	25th percentile – price change	75th percentile – price change	Difference
Global budgets	-10%	+10%	20 pp	2.12%	8.32%	6.20 pp
	Max penalty (average)	**Max reward (average)**	**Difference**	**25th percentile – revenue change**	**75th percentile – revenue change**	**Difference**
Quality adjustments to hospital budgets						
RRIP	-1.14%	+0.57%	1.71 pp	0.02%	0.55%	0.53 pp
MHAC	-1.14%	+1.14%	2.28 pp	0.0%	0.60%	0.60 pp
QBR	-1.14%	+1.14%	2.28 pp	-0.44%	-0.04%	0.40 pp
PAU	-0.54%[b]	0%	0.54 pp	-0.37%	-0.26%	0.11 pp
Medicare Performance Adjustment	-0.35%	+0.35%	0.70 pp	-0.04%	0.27%	0.31 pp
Episode payments (ECIP)[c]	0%	n.a.[d]	n.a.[d]	0%	0.02%	0.02 pp

Source: HSCRC performance documentation. Data from global budgets come from Rate Year 2019. Data on all other measures use Rate Year 2021. Data are available at www.hscrc.maryland.gov. For more information on how we calculated these numbers, see Appendix B.

[a] For global budgets, we expressed incentives as the percentage by which hospital could (potential) or did (realized) increase prices across all payers relative to prices set at the start of the year. We expressed all other incentives—both possible and realized—as a fraction of a hospital's total revenue (inpatient and outpatient and for all payers) to enable us to contrast the strength of different incentives. For each incentive program, HSCRC selects a type of revenue to apply the percentage to, which will affect the absolute size of the incentive (in dollars). See Appendix B for more information on how we rescaled these values.

[b] HSCRC does not set an explicit maximum penalty for the PAU. Rather, each year, HSCRC decides how much to reduce statewide hospital budgets for potentially avoidable utilization and then scales each individual hospital's budget reduction to the hospital's performance (the PAU is a permanent reduction that can compound over time). We set the maximum penalty to the largest realized penalty in rate year 2021, which was -0.54 percent (when expressed a fraction of 2019 hospital revenue).

[c] Because of lags in data availability, we included ECIP payments only for the first half of 2019 among hospitals that started participation in January 2019

[d] There is technically no upper limit for how much hospitals can earn in incentive payments for lowering the costs for episodes of care, though there are limits to how much hospitals are allowed to pay care partners In practice, however, the upper limit for each hospital will be determined by how many episodes are covered under ECIP and how much they could potentially reduce the episode costs relative to benchmarks.

Table 3.1 *(continued)*

ECIP = Episode Care Improvement Program; HSCRC = Health Services Cost Review Commission; MHAC = Maryland Hospital Acquired Infection Conditions; n.a. = not applicable; PAU = Potentially Avoidable Utilization; pp = percentage points; QBR = Quality-Based Reimbursement Program; RRIP = Readmissions Reduction Incentive Program.

3.3.1. All-payer global budgets

Overall, we found that global budgets were the strongest financial incentives to transform care in 2019 as measured by potential and realized gains or losses (Table 3.1). If hospitals decrease the volume of hospital services, they can increase their prices for all payers (relative to the prices HSCRC sets at the start of the year) so that their total revenue at the end of the year matches the budget.[16] Higher prices will, all else equal, translate into higher margins for the hospital. Therefore, how much hospitals can, and did, increase prices in a year captures the strength of the incentive to reduce avoidable hospital services. Because of the mechanics of how HSCRC sets prices, the amount that hospitals can increase prices during a year captures the efforts those hospitals took in prior years (from 2014 to 2018) to reduce volume as well as any efforts they take in the current year (2019 for this analysis) to maintain those lower volumes and to decrease them further (see text box). By design, hospitals can increase (or decrease) their prices by up to 5 percent without HSCRC permission, or up to 10 percent with permission. Therefore, the potential range in price change is a full 20 percentage points—from a 10 percent decrease in prices to a 10 percent increase. Indeed, in 2020, hospitals on average increased their prices by 5 percent, with 25 percent of hospitals increasing prices by 8 percent or more and 75 percent of hospitals doing so by at least 2 percent. These potential and realized changes in prices are about 10 times larger than the potential or realized changes in revenue in 2019 from any of the individual quality adjustments to the global budget.

Why hospital price changes in a year reflect volume declines in that year and previous years

- HSCRC sets prices in a year by taking the prices hospitals received in 2013 (before the Maryland All-Payer Model began) and updating them each year for medical inflation and other factors.
- HSCRC also sets the expected volume in a year based on the volume in 2013 plus any changes expected over time because of changes in population and market shifts—but not hospital-driven activities.
- If actual volumes are lower than expectations from 2013, the hospital can increase its prices during the year to meet its budget.
- As such, the price increases in a year relative to prices HSCRC set at the start of the year will reflect any volume reductions from prior years (2014 to 2018) plus any efforts the hospital undertakes in the current year to maintain those lower volumes and to lower them further.

Although global budgets present strong incentives, they could weaken over time for some hospitals. In 2019, 14 of the 52 hospitals in the state agreement had price increases that were near—or already above—the 10 percent threshold that HSCRC can typically permit. If these

[16] Although commercial payers and Medicare pay similar rates for hospital care in the state, Medicare does receive a small discount. Specifically, as of July 2019, Medicare pays rates that are 7.7 percent less than billed charges (the discount was 6 percent before July 2019).

hospitals reduce their volumes further, they are unlikely to be able to continue to increase their prices unless HSCRC grants special permission to do so. Therefore, these hospitals would have very little or no financial incentive to further reduce volumes (though they would be incentivized to maintain the low volumes they already had achieved). HSCRC recognizes that incentives might be weakening for some hospitals, so it is considering policies that would strengthen them. For example, HSCRC could reset the prospective prices at the start of the year to be more in line with prices hospitals have been charging recently to meet their global budgets. This change would be largely equivalent to expanding the limit on allowable price increases beyond the current 10 percent.

3.3.2. Quality adjustments to global budgets

Compared with the global budget incentives, the individual quality adjustments are small, but they nonetheless play an important role in the model. Most of the quality adjustments mirror national programs in design but contain larger incentives. In 2019, the difference between the maximum penalty and the maximum reward for most of these incentives was about 2 percent of total hospital revenue (Table 3.1), and the realized ranges were much smaller (with the difference between the 25th and 75th percentile ranging from 0.1 to 0.6 percentage points). Even though they are small compared with global budgets, these quality incentives are generally larger than similar federal incentives for three reasons:

Table 3.2. Hospital quality incentive programs in Maryland and in the rest of the county

Quality program in Maryland	Incentive to	Similar national program
Readmissions Reductions Incentive Program	Reduce all-cause 30-day readmissions	Hospital Readmission Reduction program
Maryland Hospital Acquired Conditions Program	Reduce complications developing during a hospital stay	Hospital-Acquired Condition Reduction Program
Quality-Based Reimbursement Program	Improve clinical care, patient safety and patient experience	Hospital Value-Based Purchasing Program
Potentially Avoidable Utilization	Reduce potentially avoidable hospital care	None

Note: Maryland is exempted from national programs by agreeing to achieve or surpass measured results nationally. Appendix B contains more detail on these Maryland quality programs, including the specific quality measures they contain.

- The Maryland incentives are for all-payers, and the similar national programs (Table 3.2) are only for Medicare. An internal HSCRC analysis estimates the potential inpatient revenue at risk in Maryland is about 23 percent higher than in the rest of the nation (HSCRC 2020e).
- Quality incentives in Maryland generally amplify the incentive in global budgets, creating opportunities for hospitals to gain in multiple ways for the same activity. For example, reducing 30-day readmissions enables hospitals to succeed under the Readmission Reduction Incentive Program, and doing so could also enable hospitals to translate volume reductions into price increases under global budgets. By contrast, in the rest of the county, quality incentive programs that incentivize reduced utilization are generally at odds with fee-for-service incentives to increase volume.

- The Potentially Avoidable Utilization program, designed to prospectively adjust hospital budgets based on potentially avoidable hospital care, is unique to Maryland. The program creates increased incentives relative to the rest of the nation by adding new dollars at risk and by reinforcing other quality programs with overlapping measures (for example, the Readmissions Reductions Incentive Program).

3.3.3. Medicare Performance Adjustment

The Medicare Performance Adjustment

- The purpose of the MPA is to incentivize hospitals to focus on reducing total cost of care, not just hospital care.
- The MPA increases or decreases Medicare payments by up to 1 percent based on the hospital's total cost of care performance for its attributed Medicare beneficiaries.

The MPA has so far been a modest incentive for hospitals to transform care because of its size (Table 3.1). The maximum penalty and maximum reward are both less than 1 percent of total hospital revenue. In 2019, fewer than 30 percent of hospitals had their total budgets increased or decreased by more than 0.30 percent.

The MPA could also be a muted incentive for hospitals to transform care if hospitals believe that they have limited ability to affect it. Hospital performance on the MPA is driven partly by out-of-hospital spending—and includes spending for people who do not use the hospital in the year. As such, individual hospitals might view the MPA as less actionable than other incentives, in which they have more direct control over outcomes.

3.3.4. Episode incentives

The two episode-based payment programs—ECIP and CTIs—allow hospitals to earn incentives for reducing the total cost of care for specific episodes that typically start within the hospital. Participation in these optional programs is growing, with few hospitals participating in ECIP in 2019 (see below for a discussion of participation and reach of ECIP and planned participation in CTIs, which are expected to begin in 2021).

Episode-based payment programs provide a strong potential incentive to hospitals because the programs have no direct downside risk, and because there is technically no upper bound on how much hospitals could potentially earn (though there are explicit limits on payments to care partners under ECIP).[17] In addition, for CTIs, although hospitals can only receive a positive adjustment for this incentive if they choose to join the program, all hospitals' revenues will be adjusted downward beginning in 2021 by the amount of savings generated by other hospitals' successful initiatives (spread proportionately statewide). These incentives can potentially create a dynamic in which hospitals compete to produce the largest savings (and avoid net loss after downward revenue adjustments). So far, participation has been low (see Chapter 3.4) and few hospitals have had a chance to earn a reward, perhaps because of revenue adjustment starting in 2021. For hospitals that have participated, payments have been modest (totaling less than 0.1 percent of hospital revenue).

[17] For ECIP, the amount that individual care partners can receive is capped in accordance with the CRP Participation Agreement.

3.4. Implementation of the Care Redesign Program

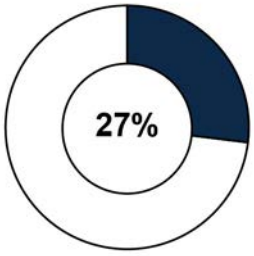
As noted in the model logic (Chapter 1.1.3), one way that hospitals can respond to the model's incentives is to participate in the CRP. This program has two fundamentally different tracks. Under HCIP, hospitals can incentivize in-hospital physicians to engage in hospital-based initiatives that help their hospitals succeed under quality-adjusted global budgets by decreasing hospital operating costs or by improving performance on quality measures. Although it allows hospitals to distribute savings to care partners, HCIP does not create any new payments for hospitals. On the other hand, ECIP is an episode-based program that enables hospitals to earn new payments for managing the total cost of care. Hospitals can then pay care partners in and outside the hospital for efforts to improve the quality and efficiency of episodes of care.

3.4.1. The Hospital Care Improvement Program

a. Participation and reach

In 2019, 77 percent of Maryland hospitals participated in HCIP, reaching more than a quarter of Medicare hospital discharges in the state (Figure 3.3).

Figure 3.3. HCIP reached around a quarter of Medicare hospital discharges in 2019



Source: Mathematica's analysis of AMS and CMS data for HCIP participation and reach.

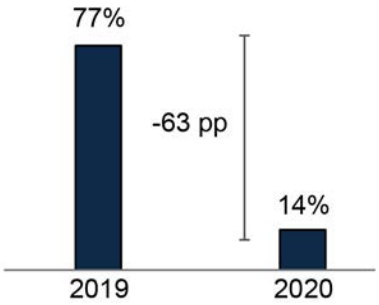
Note: There were 53,664 discharges covered under HCIP out of 200,707 total Medicare fee-for-service discharges in 2019.

AMS = Applied Medical Software; CMS = Centers for Medicare & Medicaid Services; HCIP = Hospital Care Improvement Program.

Hospitals might have joined HCIP for several reasons, including the following:

- To align the hospital's incentives with in-hospital providers, which was the original motivation for the program (AMS 2014). Although Maryland hospitals operate under a fixed global budget, physicians continue to be paid via fee-for-service. Therefore, hospital-based physicians face incentives to increase the volume of services they provide, which is at odds with the incentives faced by hospitals under global budgets to reduce the volume of services. Under HCIP, hospitals can pay providers for participating in efficiency and quality improvements that reduce hospitals' operating costs and—within fixed budgets—improve hospital margins (AMS 2014). Further, hospitals can pay providers for participating in quality improvements that could help the hospital earn quality adjustments to their budget (or avoid quality penalties).
- To access patient-level Medicare claims and Applied Medical Software (AMS) analysis of those data, including allowing hospitals to identify physicians who order particularly high use of hospital services relative to norms.
- To qualify care partners for a 5 percent increase in their Medicare billing. CRP counts as an advanced alternative payment model under CMS Quality Payment Program (Quality Payment Program n.d.).

Figure 3.4. HCIP participation substantially decreased in 2020



Source: Mathematica's analysis of CMS data for HCIP participation.

Note: N = 52 hospitals.

CMS = Centers for Medicare & Medicaid Services; HCIP = Hospital Care Improvement Program; pp = percentage points.

In 2020, participation in HCIP declined substantially: 14 percent of hospitals participated in HCIP in 2020, down from 77 percent in 2019 (Figure 3.4). Hospitals might have dropped out of HCIP for several reasons. Beginning in 2020, HSCRC started charging hospitals an administrative fee of $75,000 to participate in the program (CRISP 2019). Hospitals might not have seen that the benefits of participation outweighed this cost. Further, in 2020, as part of the MD TCOC state agreement, hospitals gained access to Medicare patient-level claims through the Maryland health information exchange (Chesapeake Regional Information System for our Patients, or CRISP), so they no longer had to join HCIP to access these data. Finally, in 2019, relatively few providers became qualified to earn the 5 percent bonus from the Quality Payment Program, potentially making the program less attractive to care partners.

Although participation in the program waned in 2020, the hospitals that remained used the program to distribute payments to in-hospital providers, consistent with the original intent of HCIP. Specifically, 6 of the 7 hospitals that continued in the program in 2020 had performed well enough in 2019 to distribute savings to care partners. By contrast, of the 33 hospitals that discontinued HCIP in 2020, only 3 achieved sufficient savings to distribute money to care partners in 2019.

b. Care partners

In 2019, hospitals on average partnered with 16 different care partners, who by design are physicians responsible for overseeing care for specific admissions at the hospital. Hospitals most frequently partnered with hospitalists to deliver allowable interventions (41 percent of care partners), followed by internists (15 percent) and orthopedic surgeons (13 percent) (Figure 3.5). Other care partner types included general surgery and cardiology.

The reach of the program reflects the number of care partners a hospital includes in the program and the number of discharges those care partners are responsible for. By focusing on hospitalists, hospitals appear to be prioritizing high-volume providers.

Figure 3.5. During 2019, hospitalists were the most common HCIP care partner

Source: Mathematica's analysis of AMS January–June and July–December 2019 HCIP payment adjustment reports with care partner data (N = 26).

Note: N = 667 care partners.

AMS = Applied Medical Software; HCIP = Hospital Care Improvement Program.

We expected that hospitals might be particularly inclined to recruit independent physicians as care partners, but this was not the case in 2019. Outside HCIP, hospitals (or systems) that employ physicians already can incentivize the physicians they employ to improve efficiency and quality of care through bonuses or other incentive programs. A tool such as HCIP, which permits hospitals to incentivize physicians for their efforts, would seem to add little value for them. In contrast, HCIP could be an important tool for hospitals (or their systems) to incentivize independent physicians who otherwise might be paid strictly on a fee-for-service basis. Despite these expectations, hospital systems employed about half of the physicians they partnered with in 2019. This pattern suggests that, at least in 2019, some of the other reasons listed above for participating beyond distributing savings to care partners might have been key drivers of HCIP participation. The seven hospitals that continued the program in 2020, however, largely partnered with independent care partners (75 percent), suggesting that they used the program more as it was originally designed.

c. Allowable interventions

Through HCIP, hospitals and their care partners deliver allowable interventions that support efficient delivery of care. In 2019, participating hospitals implemented a median of three allowable interventions, most commonly in the patient safety and clinical care categories (55 percent of hospitals each), as well as the care coordination category (53 percent) (Figure 3.6). In the patient safety category, many hospitals implemented interventions related to infection and sepsis prevention, including post-operative letters to physicians to identify surgical site infections. In the clinical care category, some hospitals implemented interventions around medication error prevention, such as self-reporting adverse events through a dashboard to identify the root cause of errors. And, for care coordination, some hospitals measured how often care plans for certain high-risk patients were documented in CRISP. Many of the interventions delivered aligned with quality-based incentives for the hospitals. For example, hospitals can improve their scores for the Quality-Based Reimbursement Program and Maryland Hospital Acquired Infection Conditions programs if they reduce infections, including sepsis.

Figure 3.6. Most HCIP hospital participants implemented interventions in the patient safety, clinical care, and care coordination categories

Source: Mathematica's analysis of The Lewin Group's 2019 Q1–Q3 HCIP report summary.

Notes: N = 40 hospitals. Data include hospitals that implemented an intervention in each category for one, two, or three quarters in 2019.

HCIP = Hospital Care Improvement Program; Q = quarter.

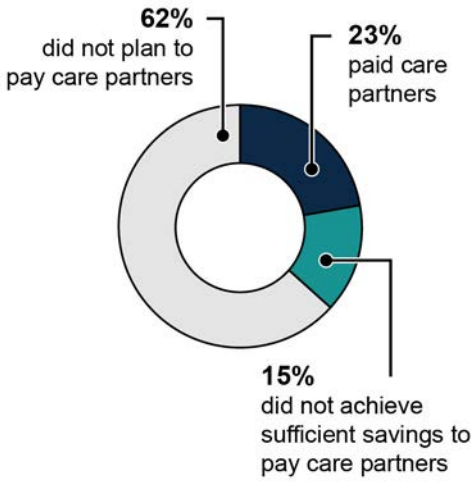
But not all interventions provided under HCIP in 2019 were new that year. For example, one hospital indicated that it planned to continue its existing strategy of monitoring 30-day readmissions as an HCIP intervention. Many hospitals adapted existing programs or initiatives to support their HCIP program so they could distribute savings to care partners (Haber et al. 2019).

d. Savings distributed to care partners

Only 9 of the 40 hospitals participating in HCIP paid partners in 2019 because of a combination of hospital choices and program criteria. The following must be true for a hospital to distribute payments to partners:

- *The hospital must elect to distribute payments.* Only 15 of the 40 participating hospitals elected to distribute payments. The other 25 participating hospitals chose not to, even if program data suggested care partners generated significant savings. These other hospitals might already have mechanisms in place to incentivize employed physicians to make care delivery changes, such as bonuses for meeting quality measures. Rather than distributing savings through HCIP, these hospitals could be using HCIP data to help determine physician bonuses. For example, one hospital reported that it planned to use HCIP to identify improvement areas and add them as conditions to its hospitalists' merit-based stipends. Indeed, 19 of the 25 hospitals that did not plan to distribute payments were part of large health systems that likely could structure quality-based incentives for their hospital employees.
- *If the hospital elects to distribute payments, that hospital must meet a savings threshold that it sets for distributing savings to any care partners.* For example, one hospital would only distribute payments if it performed well under the MPA. Of the 15 hospitals planning to distribute savings, only 9 met this threshold.

Figure 3.7. Only a quarter of HCIP participants planned to pay care partners and earned enough savings to do so



Source: Mathematica analysis of 2019 AMS data and PP4 HCIP Implementation Protocols submitted by hospitals.

Note: N = 40 hospitals.

AMS = Applied Medical Software; HCIP = Hospital Care Improvement Program.

These 9 hospitals distributed funds to 280 physicians in 2019, with an average payment of $2,700 per physician. Hospitals only distributed funds to physicians who, per HSCRC calculations, generated internal costs savings for hospital admissions when they had lead responsibility for patient care. To calculate this, HSCRC used the AMS Performance Based Incentive System®, a proprietary tool that calculates internal cost savings by comparing actual internal costs with benchmarks. Further, the providers had to have delivered one or more allowable interventions that the hospital had selected as conditions for payment.

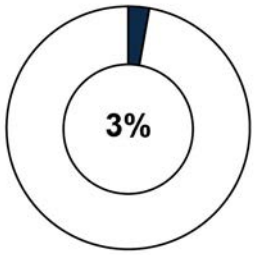
The 280 physicians who received payments in 2019 only received 47 percent of the internal cost savings generated for the nine hospitals. This suggests that hospitals kept about half of the internal cost savings themselves.

3.4.2. The Episode Care Improvement Program

a. Participation and reach

HSCRC added ECIP as a new track under the CRP starting in 2019, modeled after the BPCI-A model. Just under one-third of hospitals (15 hospitals) in Maryland participated in ECIP in 2019, with eight starting in January and seven starting halfway through the year. The program had limited reach, accounting for less than five percent of discharges from hospitals in the state (Figure 3.8).

Figure 3.8. ECIP reached less than 5 percent of Medicare discharges across the state in 2019



Source: Mathematica's analysis of CRISP ECIP participation and performance data.

Notes: There were 5,355 discharges covered under ECIP out of 200,707 total Medicare fee-for-service discharges from regulated Maryland hospitals in 2019.

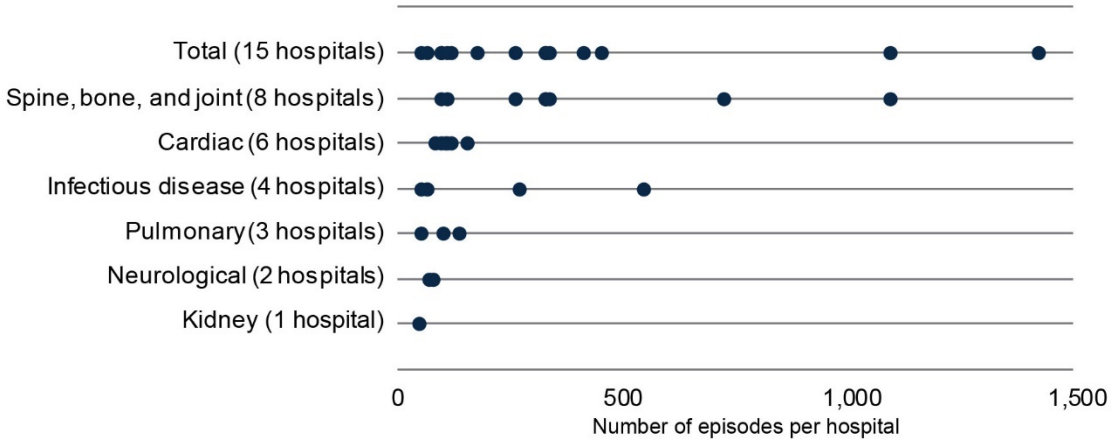
CRISP = Chesapeake Regional Information System for our Patients; ECIP = Episode Care Improvement Program.

ECIP enables hospitals to earn new payments for reducing the total cost of care of episodes and allows hospitals to distribute savings to care partners, if they choose to. Hospitals may also participate in the program to perform well under the MPA and, to some extent, other quality incentive programs. Further, individual care partners might join the program because it could qualify them for bonuses under the CMS Quality Payment Program.

As part of ECIP, hospitals select one or more clinical episodes from a predefined list. In 2019, more than half of participants (8 hospitals) selected clinical episodes in the spine, bone, and joint category, most often participating in the joint replacement episode. The spine, bone, and joint category also represented the largest number of episodes per hospital (a median of 329) (Figure 3.9). Several hospitals also participated in episodes in the cardiac (6 hospitals), infectious disease (4 hospitals), and pulmonary categories (3 hospitals), but these categories generally represented a smaller number of episodes.

Among participants, the program's reach depends on the number of discharges that fall under a hospital's selected clinical episodes. Across clinical episodes, ECIP reached a median of 5 percent of discharges among participating hospitals. This suggests that several factors limited the overall reach of ECIP in Maryland in 2019, including the number of participating hospitals, the clinical episode types participants selected, and the number of discharges covered by those selected episodes.

Figure 3.9. Most ECIP episodes were in the spine, bone, and joint category



Source: Mathematica's analysis of CRISP ECIP participation data for 2019.

Notes: Each dot represents one hospital's total episodes, overall or in the episode category. We consolidated 23 episodes across seven categories, following HSCRC's crosswalk of ECIP episodes to BPCI-A episodes and CMS's categories of clinical episodes. No hospitals participated in any episodes in the gastrointestinal category. These data reflect 15 hospitals and 5,355 episodes.

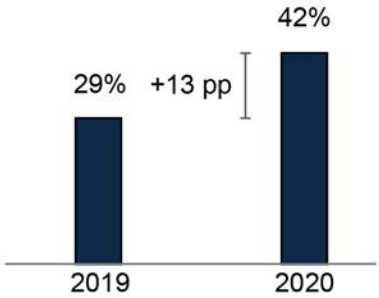
BPCI-A = Bundled Payment for Care Improvement Advanced; CRISP = Chesapeake Regional Information System for our Patients; ECIP = Episode Care Improvement Program; HSCRC = Health Services Cost Review Commission.

In 2020, more hospitals participated in ECIP: 42 percent of hospitals participated in ECIP, up from 29 percent in 2019 (Figure 3.10). The increase in participation was mainly because of an additional nine hospitals from two large health systems

b. Care partners

To help manage the total cost of care, hospitals can partner with individual practitioners, such as physicians, nurses, and physical therapists, or post-acute care facilities. In 2019, two-thirds of ECIP hospital participants partnered with at least one facility care partner, most commonly with skilled nursing facilities and home

Figure 3.10. More hospitals participated in ECIP in 2020



Source: Mathematica's analysis of HSCRC ECIP participation data.

Note: N = 52 hospitals.

ECIP = Episode Care Improvement Program; HSCRC = Health Services Cost Review Commission; pp = percentage points.

health agencies (Figure 3.11). Hospitals recruited varying amounts of individual care partners. Half of hospitals (eight hospitals) worked with fewer than 10 physician care partners under ECIP, and two hospitals worked with more than 400 physician care partners each.

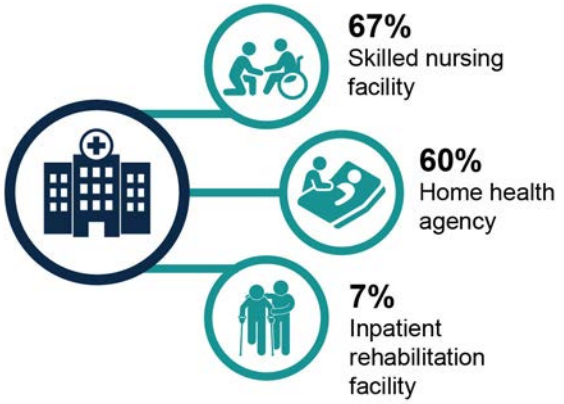
c. Allowable interventions

In 2019, just over half of ECIP hospitals implemented interventions to enhance coordination with post-acute care providers, implement standardized evidence-based protocols, and enact interdisciplinary team meetings (eight hospitals each) (Figure 3.12). For example, one hospital planned to follow up with each patient's primary care provider within a week of discharge. Another hospital conducted interdisciplinary care team meetings before elective surgeries to determine the best setting for post-acute care, such as the home, outpatient services, or a rehabilitation center.

d. Payments to hospitals and savings distributed to care partners

Three hospitals generated enough cost savings relative to a benchmark to earn new payments under ECIP for the first half of 2019. The payments totaled about $400,000 across hospitals and represented a low share of total hospital revenue. Because risk in ECIP was upside only in 2019—and remained upside only in 2020 and 2021—no hospitals were financially penalized if they did not meet savings targets.

Figure 3.11. During 2019, hospitals most commonly used SNFs and HHAs as ECIP care partners

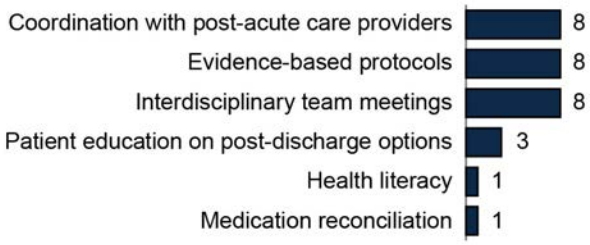


Source: 2019 ECIP care partner data provided by HSCRC.

Note: N = 15 hospitals.

ECIP = Episode Care Improvement Program; HSCRC = Health Services Cost Review Commission; HHA = home health agency; SNF = skilled nursing facility.

Figure 3.12. Most ECIP hospital participants implemented interventions to coordinate with post-acute care providers, enact evidence-based protocols, and conduct interdisciplinary team meetings



Source: Mathematica's analysis of The Lewin Group's 2019 ECIP report summary.

Note: N = 15 hospitals.

ECIP = Episode Care Improvement Program.

Similar to HCIP, ECIP hospitals can distribute savings to care partners. In 2019, under half of participants (six hospitals) planned to distribute 50 to 80 percent of earned savings to care partners, and the remaining nine hospitals planned to retain the full incentive amount. These hospitals could instead have opted to share nonfinancial resources such as technical assistance and care managers. None of the hospitals that planned to distribute savings to care partners,

however, earned any new payments under ECIP for the first half of 2019, so they could not distribute savings. Although ECIP participation among hospitals and care partners increased in subsequent model years, the share of hospitals planning to share savings with care partners decreased to 32 percent of participants in 2020 and 19 percent in 2021.

3.5. Planned implementation of Care Transformation Initiatives

HSCRC introduced CTIs to provide hospitals with an additional tool to succeed under the MD TCOC Model incentives. COVID-19 delayed CTIs' original start date of 2020, and they are now expected to start in mid-2021. Similar to ECIP, CTIs allow hospitals to earn new payments for reducing the total cost of care for episodes of care. Although ECIP and CTIs are broadly similar programs, they have important differences:

- CTIs allow hospitals more flexibility to design their own episodes based on hospital priorities, including defining a target population, selecting a trigger to initiate the episode (such as a hospital admission or a new diagnosis), and choosing the episode duration.
- CTIs have fewer reporting requirements, including no formal inclusion of allowable interventions.
- CTIs are not covered under the CRP fraud and abuse waivers, so hospitals cannot share savings with providers.[18]
- Unlike ECIP, CTIs do not qualify as an AAPM under the CMS Quality Payment Program and do not make providers eligible to receive the 5 percent bonus for Medicare payments.
- HSCRC designed the CTI program to provide incentives to participate and disincentives not to participate, which could encourage overall participation in CTIs. Specifically, the incentive to participate is the chance to earn additional payments from Medicare by reducing episode spending below targets. The disincentive not to participate is that Medicare will reduce hospital payments across all hospitals by enough to fully pay for the payments to hospitals that are successful under CTIs. So, a hospital that opts not to participate will end up having lower payments to fund the successful hospitals without any opportunity to earn payments from success of their own.

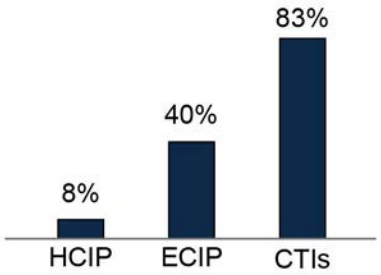
CTIs are designed to reward hospitals for care transformation successes and investment, and they could reward changes that occurred before the beginning of the MD TCOC Model. Because hospitals can compare performance with a 2016 benchmark, CTIs intentionally allow hospitals to seek rewards for activities that first occurred under the MDPAM.

[18] Fewer than half of ECIP participants planned to distribute savings in 2019 (and the proportion of hospitals using ECIP for this purpose in 2020 and 2021 further declined), suggesting that many hospitals do not view the ability to distribute savings to partners as central to succeeding in certain episodes of care.

3.5.1. Planned participation

In 2021, more hospitals are expected to participate in CTIs than in either track of the CRP.[19] Most hospitals (83 percent) plan to participate in CTIs in 2021, compared with just 40 percent participating in ECIP and 8 percent participating in HCIP (Figure 3.13). Although many hospitals submitted individual CTI proposals, some submitted proposals as part of health systems or collaboratives with post-acute care providers such as skilled nursing facilities. Because of the high number of participants—including post-acute care providers—CTIs could become key drivers of total cost of care reduction across the state.

Figure 3.13. In 2021, CTIs should be the dominant hospital program



Source: Mathematica's analysis of data provided by HSCRC.

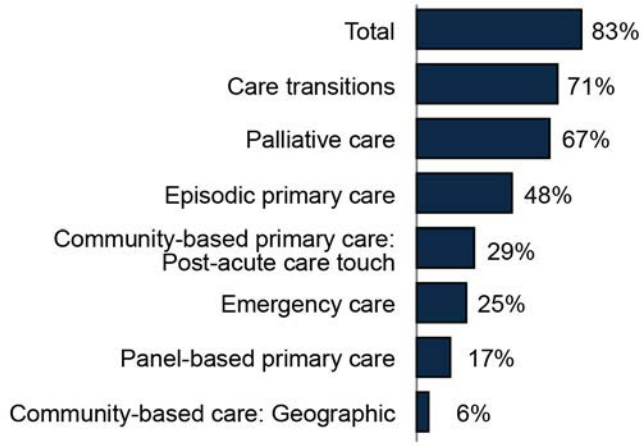
Note: N = 52 hospitals.

CTI = Care Transformation Initiative; ECIP = Episode Care Improvement Program; HCIP = Hospital Care Improvement Program; HSCRC = Health Services Cost Review Commission.

3.5.2. Proposed thematic areas

Hospitals that plan to participate proposed an average of four CTIs across seven thematic areas. Hospitals most commonly planned to participate in episodes relating to care transitions (71 percent) and palliative care (67 percent) (Figure 3.14). For example, a group of hospitals from one health system proposed a care transitions CTI in which the care team identifies high-risk patients through risk stratification and uses community health workers to connect patients with the appropriate care and community resources after discharge. In the palliative care thematic area, several hospitals proposed interventions to identify patients who could benefit from palliative care and refer them to the palliative services team for further evaluation.

Figure 3.14. Hospitals most frequently proposed CTIs within the care transitions, palliative care, or episodic primary care thematic areas



Source: Mathematica's analysis of CMS CTI proposal data.

Notes: N = 52 hospitals. Primary care breaks into two thematic areas: episodic (initiated by an E&M service) and panel-based (followed throughout the performance period). Community-based care also breaks into two thematic areas: post-acute care touch (initiated by engagement with a post-acute care provider) and geographic (followed throughout the performance period in a particular geographic area).

CTI = Care Transformation Initiative; E&M = evaluation and management.

[19] The launch date for CTIs has been delayed several times because of COVID-19. The current expected launch date is July 1, 2021.

Chapter 4. Model Implementation: Primary Care and Care Transformation Organization Pathway

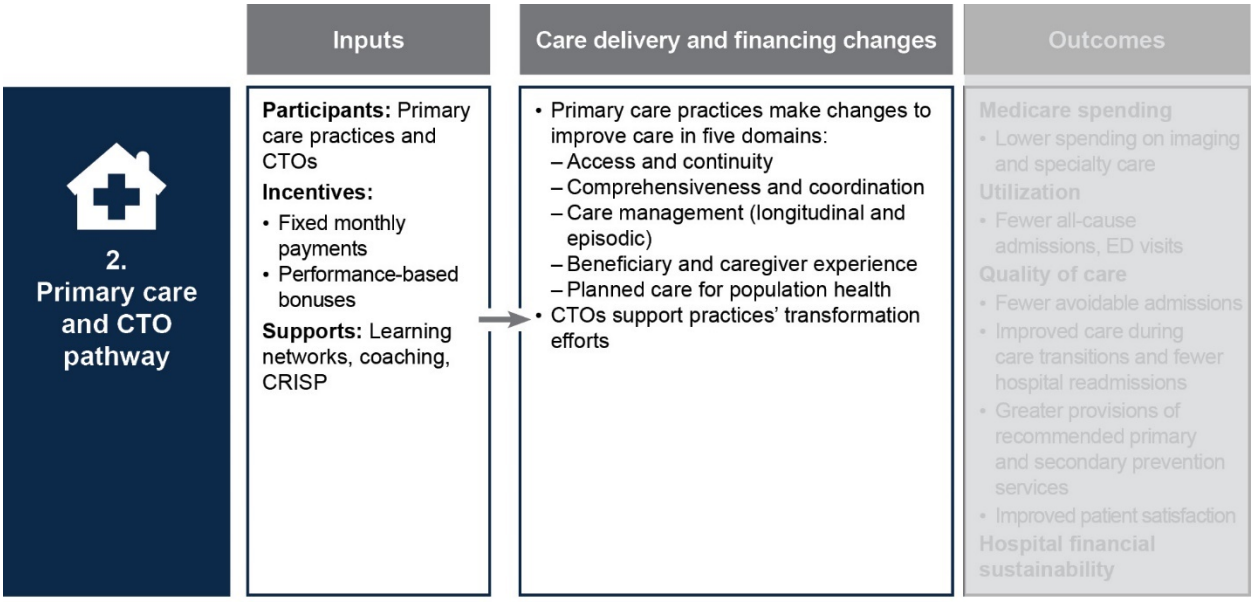
Key takeaways

- In 2019, 380 primary care practices participated in MDPCP. After an additional 101 practices joined in 2020, the program reached nearly 30 percent of all primary care physicians and nearly half (47 percent) of all Medicare FFS beneficiaries in the state.
- In 2019, around three-quarters of practices (78 percent) partnered with a CTO. Of these practices, many (71 percent) partnered with a CTO that was operated by a health system, such as MedStar Health. Practices affiliated with a health system generally partnered with a CTO that was part of the same system.
- CMS paid each participating practice an average of $163,751 to support their transformation efforts in 2019, increasing a practice's total revenue (across all payers) by about 9 percent.
  - Most (86 percent) of these payments came through monthly care management fees, and the remainder (14 percent) came through performance-based incentives.
  - The $163,751 total includes payments that practices kept for themselves and amounts, if applicable, they directed to CTOs to support their transformation activities.
  - CMS also made other investments not included in this total: partial capitation payments for Track 2 practices and bonuses to providers for participating in an AAPM.
- CTOs received substantial payments in 2019 to support practice transformation efforts (median $737,219). These organizations used their funding to provide direct clinical support to practices (for example, care managers) as well as non-clinical support (for example, data analysts and practice transformation specialists).
- During the first year of the model, practices self-reported progress in changing care across the five functions in ways that are likely to improve outcomes, including the following:
  - Expanding access to office visits on the weekend, in the evening, or in the early morning
  - Doubling follow-up rates after a hospital or ED visit
  - Increasing the number of practices that offered care management services, enabled by improved access to care management staff through use of care management fees to hire new positions or to partner with CTOs
  - Reaching more patients with behavioral health supports in the practice
  - Increasing the frequency of care team meetings to discuss high-risk beneficiaries

4.1. Focus of this chapter

This chapter focuses on how primary care practices and CTOs have implemented the MD TCOC Model—focusing mainly on 2019 but including 2020 when feasible (given data availability at the time of analysis). As Figure 4.1 shows, practice transformation is one of the key pathways through which the MD TCOC Model could improve outcomes, including reducing avoidable acute care, improving care transitions, and improving patients' satisfaction.

Figure 4.1. Logic of the primary care and CTO pathway



Note: In this chapter, we focus on the parts of the model logic that are not shaded gray in the figure.

CRISP = Chesapeake Regional Information System for our Patients; CTO = Care Transformation Organization; ED = emergency department.

4.2. Practices and Care Transformation Organizations participating in the Maryland Primary Care Program

CMS and the MDH plan to invite practices and CTOs to join MDPCP over five years (2019 to 2023). In the program's first year (2019), many types of practices and CTOs joined the model.

4.2.1. Practice participation in 2019 and 2020

In 2019, 380 practices participated in MDPCP. One of these practices withdrew halfway through 2019, and four others merged with other practices participating in MDPCP, resulting in 375 practices participating throughout the year. Another 101 practices joined in 2020. Of the 476 practices that were part of MDPCP at the start of 2020, four were terminated from MDPCP, and another four withdrew during the year, resulting in a total of 468 practices participating throughout 2020.[20]

Figure 4.2. In 2020, MDPCP reached 24 percent of primary care practices, 29 percent of primary care physicians, and 47 percent of Medicare FFS beneficiaries in Maryland

Source: Mathematica's analysis of 2020 MDPCP participation data provided by The Lewin Group, Medicare claims data, and OneKey data from IQVIA.

Notes: Out of the 1,943 primary care practices in Maryland, 468 participated in MDPCP through the end of 2020.

Out of 4,145 primary care physicians in Maryland, 1,219 participated for the full year in 2020. Because of limitations in the underlying data, the roughly one-third of practitioners participating in the model who are nurse practitioners or physician assistants are not captured in this calculation.

Out of 740,301 Medicare FFS beneficiaries in Maryland, 345,365 were attributed to MDPCP practices by the end of 2020.

See Appendix C for more details.

FFS = fee for service; MDPCP = Maryland Primary Care Program.

The model had significant reach in 2020. The 468 practices participating in 2020 accounted for 24 percent of all primary care practices in Maryland, 29 percent of all eligible primary care physicians, and 47 percent of all Medicare FFS beneficiaries eligible to be attributed to the model (Figure 4.2) (Appendix C describes these calculations). MDPCP is expected to continue to grow in the future, with enrollments open for the first five years of the eight-year model (2019 to 2023). The exception is 2022, during which the model is not accepting new practices. Because the model reached a larger share of Medicare FFS beneficiaries (47 percent) than eligible primary care physicians (29 percent), it suggests that MDPCP so far has attracted physicians and practices that serve a disproportionally large number of Medicare beneficiaries.

Practices that participated in MDPCP through the end of 2020 were diverse in ways that might affect model implementation.

- ***Size.*** In total, 42 percent of participating practices had one or two participating providers. The average number of participating providers in practices in MDPCP was four, with the largest practice having 24 participating providers.

[20] CMS terminated four practices in 2020 because they did not complete their care transformation requirement reporting or no longer had at least one eligible practitioner at the practice site. All four practices that withdrew in 2020 did so because of organizational changes (such as the practice closing or the practice becoming a Federally Qualified Health Center).

- ***System affiliation.*** At least 42 percent of participating practices were affiliated with a health system. Practices affiliated with three health systems were responsible for 22 percent of all MDPCP participation: MedStar Health (10 percent), University of Maryland Medical System (6 percent), and Johns Hopkins Health System (6 percent).[21] The remaining practices (58 percent) were not affiliated with a health system, although some of these practices belong to large physician organizations or multispecialty practices that could still offer some economies of scale.
- ***Location.*** In 2020, the percentage of eligible primary care physicians who participated in the model was fairly uniform across different regions of the state, with two exceptions. In most regions, the percentage fell by 35 to 40, but participation was relatively low in the Capital Region (16 percent) and high in Southern Maryland (48 percent) (Table 4.1).

Table 4.1. MDPCP's reach among eligible primary care physicians in Maryland in 2020

Region	Percentage participating
Baltimore City	37
Capital Region	16
Central Maryland	36
Eastern Shore	39
Southern Maryland	48
Western Maryland	38

Source: Mathematica's analysis of 2020 MDPCP participation data provided by The Lewin Group and Medicare claims data. The definitions for the regions come from the Maryland Hospital Association.

Notes: The percentages displayed are the proportion of primary care physicians with an office in a region who were participating in MDPCP in 2020.

The denominators for these percentages are as follows: Baltimore City: N = 642; Capital Region: N = 1504; Central Maryland: N = 1325; Eastern Shore: N = 245; Southern Maryland: N = 138; Western Maryland: N = 291.

Practices join MDPCP in one of two tracks, which differ in their degree of expected care transformation. Most practices (90 percent) joined the model in Track 1 in 2019. About one-quarter (26 percent) of practices in 2020 were in Track 2. In all, 21 percent started as Track 1 when they joined the model and then transitioned to Track 2 by end of 2020, and 5 percent started as Track 2 when they joined for their first performance year in 2020.

Practices can also elect to partner with a CTO—an entity designed by CMS and the MDH for MDPCP—to support their care transformation efforts. CTOs hire and manage interdisciplinary care management teams to provide care management services for participating practices in addition to providing technical assistance to support care changes. In 2019, about three-quarters of practices (78 percent) partnered with a CTO. Few Track 2 practices (16 percent) partnered with a CTO, though most partnered with a physician organization that provided CTO-like supports (see the callout box below to learn more about these Track 2 practices).

[21] These are the same three systems we noted in Chapter 3.3.2, that own or manage hospitals accounting for a little more than half of all Medicare FFS discharges in the state.

4.2.2. Characteristics of Care Transformation Organizations

In 2019, 21 organizations participated in the model as a CTO, of which health systems operated 11. More than half the health systems that operated in Maryland (10 of the 16) offered CTOs in 2019; in one case, a health system (University of Maryland) offered two CTOs in different regions. The 11 system-operated CTOs supported a disproportionate share of practices (71 percent of all practices that received CTO support). By serving as CTOs, system-operated CTOs can receive financial support to improve the quality and reduce the costs of care among their attributed patients, which could help their affiliated hospitals perform well under global budgets (which incentivize lower volume), the MPA, and other incentive programs.

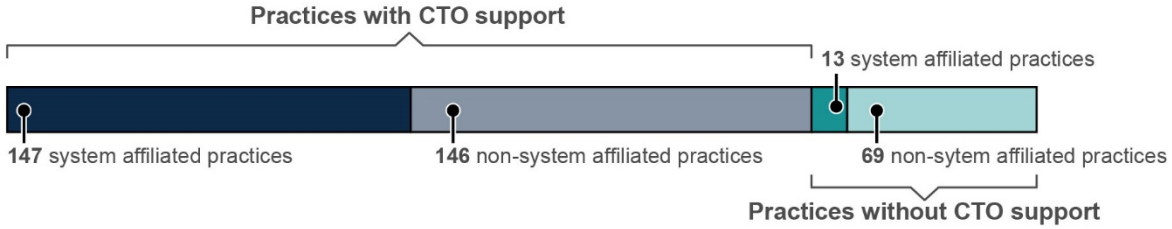
The remaining 10 CTOs comprise 6 independent organizations, 3 physician-led organizations, and 1 non-system affiliated hospital. Independent CTOs include health care consulting companies that support practices (and sometimes hospitals or health plans) without ownership relationships, often advertising supports to providers with the transition to value-based care. Physician-led organizations are networks of physicians that do not include a hospital (for example, independent practice associations).

In all, 8 of 14 health systems and physician-led organizations that operate CTOs also operate accountable care organizations. These organizations often provide similar practice transformation supports and shared savings payments to CTOs. CTOs can leverage existing accountable care organization infrastructure to help practices meet the MDPCP requirements.

A closer look: Relationships between practices, CTOs, health systems, and tracks in 2019

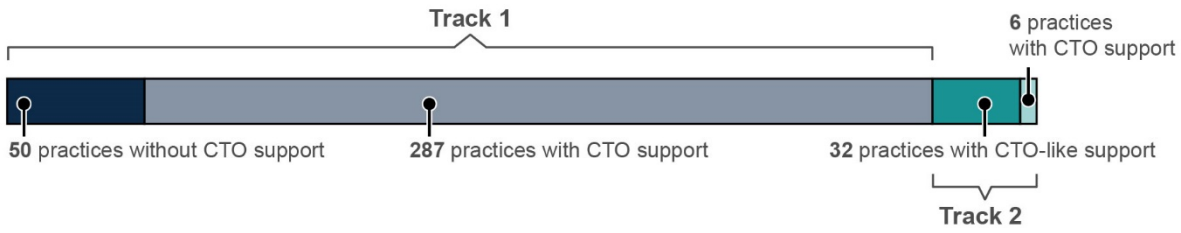
- **The implementation experiences of practices that receive support from a CTO or are affiliated with systems might differ from those of practices that do not have these supports.** Because health systems can operate CTOs and can own or manage practices, these relationships are often related.
  - Most practices partnered with a CTO (78 percent). System practices were more likely to partner with a CTO (92 percent) than non-system practices were (68 percent).
  - Of the practices that were part of a system that also operated a CTO, virtually all of them partnered with their system-run CTO.
  - Compared with non-system practices that partnered with a CTO, system-affiliated practices that partnered with a CTO were more likely to already employ care managers at baseline (33 versus 19 percent), more likely to have patient-centered medical home recognition before joining the model (76 versus 47 percent), and more likely to participate in the Medicare Shared Savings Program (52 versus 25 percent), suggesting they might require different supports from CTOs than their non-system counterparts.

MDPCP practices with CTO support by system affiliation:



- **Track 2 practices receive different payment supports and have some different care transformation requirements than Track 1 practices.** In 2019, very few practices were Track 2 (10 percent), and they generally were not affiliated with a CTO or system.
  - More than 80 percent of Track 2 practices (32 practices), however, belonged to the same physician organization that provided CTO-like supports outside the formal MDPCP. This physician organization provided tools, technical assistance, and staffing to support practice transformation.
  - Compared with Track 1 practices, Track 2 practices were generally more advanced at baseline: they were more likely to have patient-centered medical home recognition before joining the model (80 versus 46 percent) and more likely to participate in the Medicare Shared Savings Program (30 versus 19 percent).

MDPCP practices with CTO support by track:



Throughout this chapter, we generally describe the implementation experience of all practices together. When relevant for certain MDPCP functions, we describe key differences across characteristics derived from these groups. We generally avoid subgroup analysis by track because so few practices were Track 2 in 2019 (38 practices, or 10 percent).

4.3. Incentives and supports that practices and Care Transformation Organizations received from the model in 2019

To help MDPCP practices deliver advanced primary care, Maryland and CMS provide financial supports; incentives; and access to a learning system, CRISP, and practice coaches. In this section, we describe the financial incentives and supports that practices and CTOs received in 2019 (Center for Medicare & Medicaid Innovation n.d.). Appendix C includes more detail about the payment structure for MDPCP.

A Closer Look: Payments to practices in the MDPCP

Enhanced payments to support and incentivize practices

CMS provides enhanced financial supports (payments that are **in addition to** usual payments for services) to practices through two mechanisms (Lewin Group 2020):

- **Care management fees** are risk-adjusted per-beneficiary-per-month payments that are not tied to practice performance on patient outcomes or process measures. These fees, which CMS pays quarterly, provide practices a steady stream of additional income to fund practice transformation activities. In 2019, these fees averaged $15 per beneficiary per month for Track 1 practices and $28 per beneficiary per month for Track 2 practices. Higher payments for Track 2 practices reflect the more intensive transformation activities asked of them.
- **Performance-based incentives payments,** paid annually, are tied to practice performance. CMS pays each practice a lump sum at the start of the year ($2.50 per beneficiary per month for Track 1 and $4.00 per beneficiary per month for Track 2) that CMS can totally or partially recoup at the end of the year based on practices' performance on cost, quality, and patient experience measures. This recoupment approach is rooted in behavioral economic theories that suggest providers will be more motivated to improve on incentivized measures if they risk losing an award already granted (that is, loss aversion) than they will if they have the chance to earn the same-size award. Practices are not eligible for PBIPs if they participate in the Medicare Shared Savings Program; those practices are eligible for shared savings through their accountable care organizations.

Moving Track 2 practices away from fee-for-services payments

In addition to enhanced payments, CMS provides the Comprehensive Primary Care Payments (CPCP) for practices participating in Track 2. The CPCP includes a prospective payment for a percentage of expected Medicare payments for evaluation and management services through the Medicare Physician Fee Schedule to attributed beneficiaries. Practices choose what percentage of their evaluation and management claims they want to be paid prospectively. Practices continue to bill evaluation and management visits as usual, and the corresponding payments are reduced by the percentage elected. Track 2 practices also receive a 10 percent increase to their CPCP to compensate for the increased depth and breadth of care provided to Medicare FFS beneficiaries.

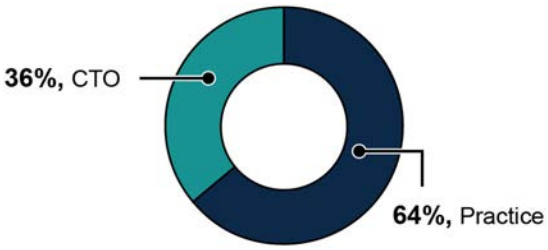
Bonus payments for participating in an Advanced Alternative Payment Model

MDPCP counts as an AAPM under the CMS Quality Payment Program. Therefore, providers participating in MDPCP are potentially eligible to receive a bonus equal to 5 percent of their Medicare Part B payments. To be eligible, a provider must receive at least 50 percent of its Medicare Part B payments at an MDPCP participating practice or at least 35 of its patient panel must be Medicare patients at an MDPCP practice.

4.3.1. Funding streams to support practice transformation in 2019

CMS provided enhanced payments to MDPCP practices to support their practice transformation efforts related to the MDPCP primary care functions. Across all payments made in MDPCP for enhanced services, 64 percent went directly to practices, and the remainder were paid to CTOs to support practices by providing care management services and technical assistance to meet MDPCP functions (Figure 4.3).

Figure 4.3. In 2019, CMS provided most enhanced MDPCP funding directly to practices



Source: Mathematica's analysis of 2019 MDPCP financial data submitted by practices and CTOs to CMS.

Notes: CMS paid a total of $61.5 million in CMFs and PBIPs to support practice transformation in 2019. Of this $61.5 million, $39.0 million (64 percent) went directly to practices. The other $22.5 million (36 percent) went to 21 CTOs to support practice transformation.

CMF = care management fee; CTO = Care Transformation Organization; MDPCP = Maryland Primary Care Program; PBIP = performance-based incentive payment.

Of the practices that partnered with a CTO, 76 percent deferred half of their CMF payments, and the remaining 24 percent deferred 30 percent of their CMF payments to their partner CTOs. CTOs use their funding to provide clinical support to practices (for example, care managers and social workers) and non-clinical support (for example, data analysts and practice transformation specialists).

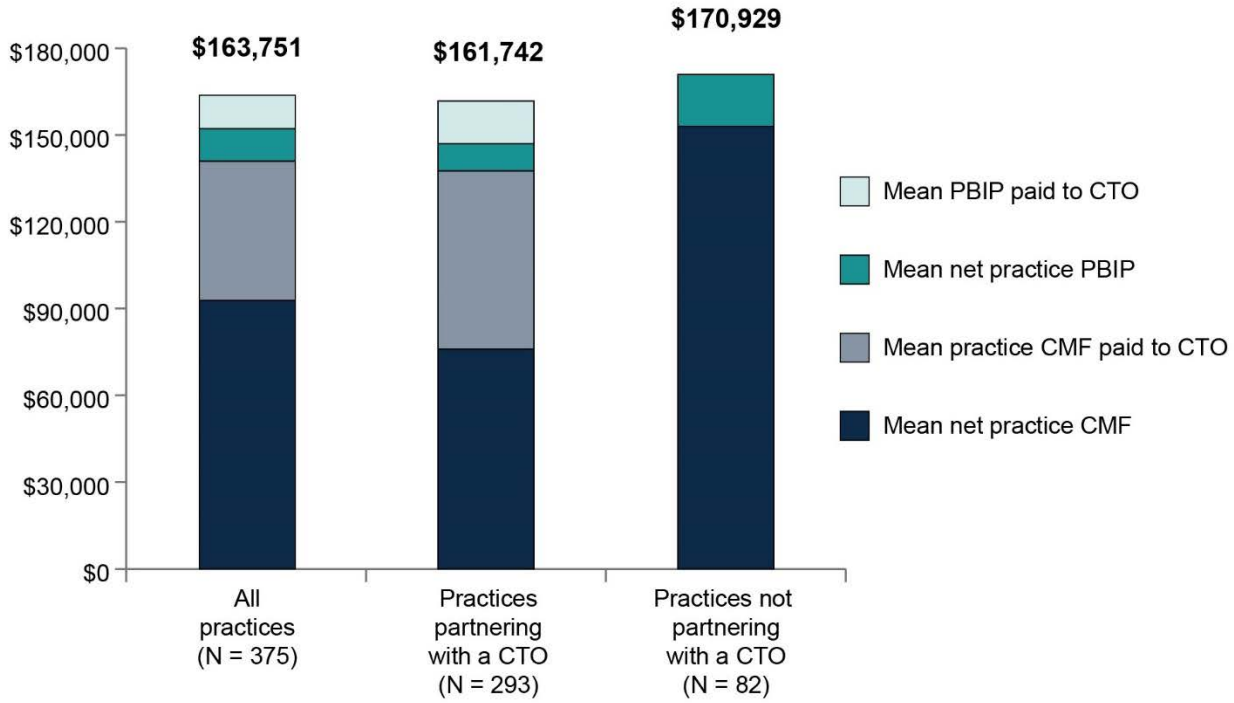
MDPCP is designed to be multi-payer, but only Medicare FFS participated in 2019. In 2020, CareFirst—the dominant commercial payer in the region—joined as an aligned payer by providing data feedback for MDPCP measures, but it did not provide new payments to practices. CareFirst has had its own patient-centered medical home model since 2011 and provides only data feedback supports to MDPCP practices already participating in its model. Medicaid (which is primarily provided by managed care organizations) and other payers in Maryland have not participated in MDPCP thus far.

4.3.2. Payments to practices, including payments practices deferred to Care Transformation Organizations

CMS paid practices enhanced payments to support practice transformation, primarily through CMF payments (mean payment was $140,942 per practice). CMS also paid a small share of the enhanced payments to practices for performance through performance-based incentive payments (mean payment was $22,809 per practice) (Figure 4.4). Taken together, these Medicare payments

averaged $163,751 per practice, which on average increased practice all-payer revenue by 9 percent.[22]

Figure 4.4. In 2019, each participating practice received, on average, $163,751 in new support for practice transformation, primarily through CMFs



Source: Mathematica's analysis of financial data provided by The Lewin Group

Note: N = 375 MDPCP practices. If a practice opts to partner with a CTO, the practice defers 30 percent or 50 percent of its CMFs to the CTO. CMS pays practices and CTOs PBIPs separately (that is, practices have the opportunity to retain their entire PBIP, and CTOs have the same opportunity).

CMF = care management fee; CTO = Care Transformation Organization; MDPCP = Maryland Primary Care Transformation Program; PBIP = performance-based incentive payments.

Payments are designed to support Medicare beneficiaries, although it is likely that some supports were provided for all patients regardless of payer. For example, when practices expand access to care during nights or weekends, they would likely expand access to all patients, not just Medicare beneficiaries. In addition to payments from CMS, providers might also be interested in participating in the model to earn incentive payments not tied directly to the model. Specifically, practitioners can receive a 5 percent increase in their Medicare billing because MDPCP counts as an AAPM under the CMS Quality Payment Program.

[22] The numerator of this calculation includes enhanced payments paid to MDPCP practices (that is, CMFs and PBIPs), including the proportion of CMFs deferred to CTOs and the PBIPs paid directly to CTOs. This calculation does not include the 10 percent comprehensiveness bump on the CPCP payments nor the 5 percent increase in Medicare billing related to MDPCP being an AAPM. The denominator is the practices' self-reported practice revenue among all payers. If we limit the practice revenue to just Medicare FFS, the percentage would increase. In 2019, practices did not report revenue by payer, so we could not calculate the revenue increase strictly as a percentage of Medicare FFS revenue.

In 2020, CMS did not recoup PBIPs based on 2019 performance because of the COVID-19 pandemic. It did, however, theoretically score recoupment calculations for these payments, which provide some early insight about practices' implementation experiences in the model. Based on 2019 performance, the average practice would have retained about two-thirds of its total PBIPs, which means that the average practice still had room to improve in meeting quality and utilization measures.[23] Based on the findings from practices' experience in CPC+, the relatively small amount practices earn through PBIPs might not be large enough to motivate them to focus on these measures (Peikes et al. 2021).

Track 2 practices also received a small alternative to FFS payment, the Comprehensive Primary Care Payments (CPCP). Overall, alternative payments represented a small share of incentives and supports paid to practices because there were few Track 2 practices in 2019 (38 practices) and because Track 2 practices opted to select a low CPCP percentage. Nearly all Track 2 practices (95 percent) opted to receive 10 percent of their evaluation and management payments through CPCP (and the remaining 90 percent of their evaluation and management payments continued to be paid through FFS). Practices can select their CPCP percentage, and 10 percent was the lowest percentage available to practices in 2019, with other options ranging from 25 to 65 percent of evaluation and management payments. The CPCP payments also include a comprehensiveness supplement, which is calculated as 10 percent of the partial capitation component of the payment (in other words, the capitated payments are paid at a 110 percent rate).

Practices must transition to Track 2 by year three of their participation in the model, and the minimum CPCP percentage goes up over time (for example, in 2020, the minimum CPCP percent was 25). Thus, the model will have a greater emphasis on alternative to FFS payments in future years.

4.3.3. Payments to Care Transformation Organizations[24]

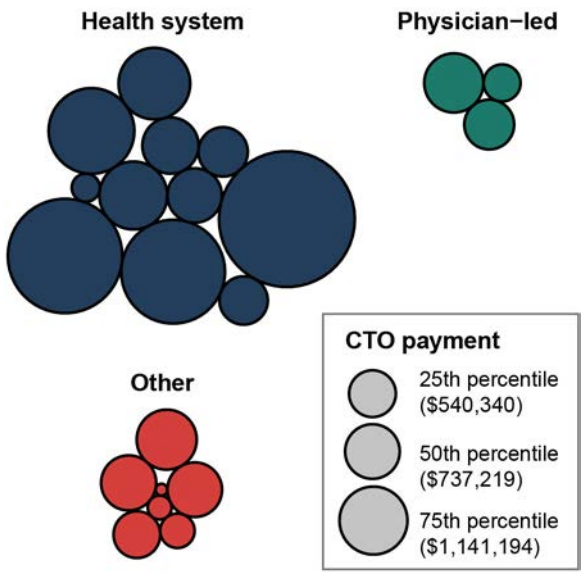
Because more than two-thirds of practices elected to work with CTOs and because CTOs receive a portion of the practices' care management fees (either 30 percent or 50 percent of the practices' care management fees) and a separate PBIP (practices and CTOs receive a separate small performance-based payment) in exchange for providing practices with care transformation assistance, a substantial amount of financial supports under MDPCP were paid to CTOs to help practices meet care delivery requirements. As noted previously, most system-affiliated practices (84 percent) partnered with CTOs operated by their same health system, so this money largely remained within the same ownership.

[23] This represents the upper bound of what practices would have retained. Practices did not have to report electronic clinical quality measures in 2019, and all practices received full credit for electronic clinical quality measures in theoretical calculations. In 2019, the proportion of PBIP earned by each practice was assessed using two equally weighted components: (1) the utilization component (comprising emergency department utilization and acute hospital utilization measures) and (2) the quality component (comprising patient experience of care measures and three electronic clinical quality measures) (Center for Medicare & Medicaid Innovation 2020).

[24] This section describes the CMFs that practices deferred to CTOs and the PBIPs that CMS paid directly to CTOs. We already included these payments in Chapter 4.3.2 when we calculated total payments to practices to support their transformation. So, the payments here are not in addition to those described in Chapter 4.3.2; rather, they are a different way of summarizing payments (from a CTO rather than a practice perspective).

By working across practices, CTOs received substantial payments in 2019—a median of $737,219 made up of $494,822 in care management fees and $242,397 in PBIPs (Figure 4.5). The amount of financial supports to CTOs varied considerably depending on how many practices and beneficiaries the CTO served. On average, CTOs partnered with 14 practices, although the three largest CTOs (all operated by health systems) each served more 30 practices and received more than $3 million in 2019.

Figure 4.5. Payments made to CTOs, by CTO type



Source: Mathematica's analysis of 2019 MDPCP financial data submitted by practices and CTOs to CMS.

Note: N = 21 CTOs.

CTO = Care Transformation Organization; MDPCP = Maryland Primary Care Program.

4.3.4. Nonfinancial supports

In addition to financial support, practices had access to nonfinancial supports, including access to a learning system, practice coaches, and several new tools in CRISP. The practice coaches, deployed by the MDH, worked with a cohort of practices to help them meet the MDPCP care transformation requirements. More than 90 percent of practices reported working with a coach. Practices reported that the coaches helped them implement care changes across all functions. For example, the coaches helped practices implement scalable quality improvement through evidence-based tools such as plan-do-study-act cycles. Although nearly all practices reported having experience with CRISP before the model, the MDH encouraged them to use CRISP tools developed specifically for the model, so practices might be using this resource in new ways. In particular, CRISP committed to support MDPCP by enabling health information exchange tools that participating practices can use to better coordinate care through two avenues: (1) providing claims-based data feedback to each participating practice for tracking progress and providing interventions and (2) aggregating the quality measure submissions from participating practices to submit to CMS (Maryland Department of Health 2018). For example, one tool—developed by the Hilltop Institute and MDH and integrated into CRISP—ranks each practice's Medicare patient by the patient's probability of having an avoidable hospital admission or ED visit. Practices can then use this tool to focus their care management efforts on patients most at risk of avoidable events.

4.4. Changes in care reported during the first year of the model (2019)

During the first year of the model, practices made progress in changing care, often with support from CTOs, in ways that could improve outcomes important to the logic of the MD TCOC Model (Table 4.2).

Table 4.2. Summary of care transformation changes in 2019

Care Change	2019 Finding	Evidence	Observed Change
Function 1. Access and continuity			
Expand access to care after hours.	More practices provided access on the weekend, evening or early morning.	18 pp increase in practices often or always offering office visits after hours or on weekends (Figure 4.6).	✓
Provide alternatives to traditional office visits.	More practices provided phone visits or telehealth.	11 pp increase of practices that were offering telehealth visits via video based conferencing and medical visits over an electronic exchange.	✓
Provide 24/7 access to a member of the care team.	Already high at baseline.	98% of practices were already providing 24/7 access at baseline.	
Empanel patients to a practitioner or care team.	Already high at baseline.	83% of practices were already empaneling patients at baseline.	
Function 2. Care management			
Follow up with patients after hospital and ED discharge.	Increased rates of discharge follow-up.	37 pp increase in follow-up rates after hospital discharge and 38 pp increase in follow-up rates after ED discharge (Figure 4.7).	✓
Provide care management.	More practices provided care management to high-risk patients.	30 pp increase in practices providing care management to high-risk patients (Figure 4.8).	✓
Risk stratify patients.	More practices used two-step risk stratification process.	28 pp increase in practices using two-step risk stratification.	✓
Function 3. Comprehensiveness and coordination			
Provide behavioral health supports.	More practices integrated behavioral health services within the practice setting.	16 pp increase in practices that provided behavioral health support to patients (Figure 4.9).	✓
Screen for health-related social needs.	More practices screened beneficiaries for health-related social needs.	24 pp increase in practices screening beneficiaries for unmet social needs.	✓
Coordinate referral management.	More practices provided referral management.	40 pp increase in practices that coordinated referral management.	✓
Function 4. Patient and caregiver engagement			
Implement a PFAC.	Most practices implemented PFACs for first time.	96% of practices held at least one PFAC by the end of 2019 (Figure 4.10).	✓
Function 5. Planned care for health outcomes			
Use care teams to support population health.	Practices made progress leveraging care team meetings.	29 pp increase in practices that had scheduled care team meetings daily or weekly (Figure 4.11.).	✓
Use data for QI.	Already high at baseline.	97% of practices already focused on at least one measure to guide QI.	

Source: Mathematica's analysis of 2019 MDPCP portal data submitted by practices to CMS.

ED = emergency department; MDPCP = Maryland Primary Care Program; PFAC = patient and family advisory council; pp = percentage point; QI = quality improvement.

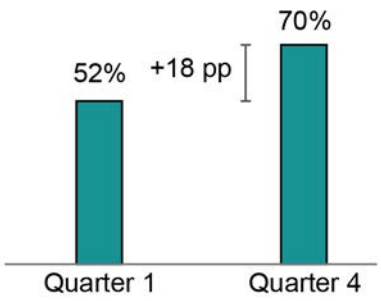
4.4.1. Access and continuity

MDPCP encourages practices to improve patients' access to primary care. The MDPCP implementation guide defines access as the availability of health services when patients need and want them, and the guide states that improving access can improve outcomes by reducing patients' wait time and increasing overall patient satisfaction with primary care. In the first year of the model, practices expanded access to care on the weekend, in the evening, or in the early morning and provided alternatives to traditional office visits. We did not observe changes in providing 24/7 telephone access to the care team or empaneling patients to a practitioner or care team, which is likely because of the relatively high levels of implementation of these tactics reported at baseline.

a. Access to care after hours

MDPCP practices made important progress increasing access to office visits after hours. By the end of 2019, 70 percent of practices reported that office visits on the weekend, in the evening, or in the early morning were often or always available to patients who could benefit from them, which was up from 52 percent in the beginning of the model (Figure 4.6). System-affiliated practices were responsible for the largest growth during this time; by the end of 2019, 73 percent offered access after-hours often or always (compared with 40 percent at the beginning of the model). Practices also made modest gains in providing other types of expanded access, including often or always providing patients who could benefit from them same or next-day appointments and telephone advice on clinical issues during office hours.

Figure 4.6. Practices made progress in offering office visits on the weekend, in the evening, or in the early morning



Source: Mathematica's analysis of 2019 MDPCP portal data submitted by practices to CMS.

Note: N = 375 MDPCP practices.

MDPCP = Maryland Primary Care Program; pp = percentage points.

b. Alternatives to traditional office visits

An increasing number of MDPCP practices also provided telehealth throughout 2019. In particular, the percentage of practices offering telehealth visits to at least some patients increased from 52 to 63 percent of practices in 2019, including video-based conferencing and medical visits over an electronic exchange. Despite progress, providing telehealth and other alternative visit types (such as visits in alternative locations, home visits, and group visits) continues to be an area of potential improvement for practices in future model years. Demand for alternative office visits, especially telehealth, increased in 2020 because of the COVID-19 pandemic. MDPCP practices that expanded use of telehealth in 2019 likely benefited from having greater infrastructure in place in 2020 to provide alternative visits.

c. Empanelment

We did not observe a change in the proportion of practices empaneling patients to care teams by the end of 2019. This is likely because 83 percent of practices reported they were already empaneling patients at baseline. Despite the large proportion of practices already experienced with empanelment, more than two-thirds of practices that partnered with a CTO reported they received support from their CTO with this requirement. For example, CTOs provided some practices with practice transformation specialists who have subject matter expertise on empanelment, which might have helped practices leverage empanelment to conduct quality improvement efforts.

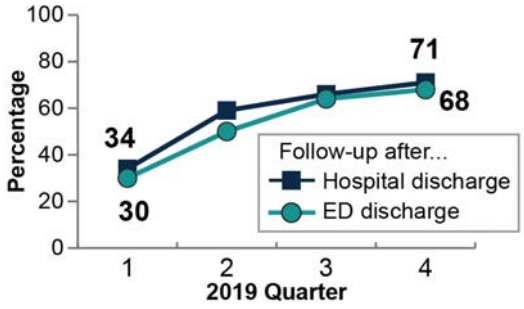
4.4.2. Care management

MDPCP requires practices to provide care management services to help patients meet their care goals and avoid unnecessary health care utilization. Care management for high-risk patients can help reduce hospital admissions, avoidable ED visits, and duplication of services. In the first year of the model, practices made progress in the care management function—including increasing follow-up with patients after discharge from the hospital or ED, providing care management to high-risk patients, and using a two-step risk stratification process. Although more practices reported at least some patients received care management in the first year of the model, care management continued to reach a relatively low share of beneficiaries in the state, leaving room for improvement in future model years.

a. Hospital and emergency department follow-up

Practices made substantial progress in providing follow-up after discharges from the ED and hospitals. By the end of 2019, practices had, on average, a 37-percentage-point increase in their hospital follow-up rates two days after discharge and, on average, a 38-percentage-point increase in ED follow-up one week after discharge (Figure 4.7). To provide timely follow-up with patients to meet this requirement, practices might have leveraged new tools provided in CRISP, such as the event notification system. This tool enables practices to view which patients have been discharged from the hospital or ED in close to real time.

Figure 4.7. Practices doubled their rates of follow-up after ED or hospital discharge



Source: Mathematica's analysis of 2019 MDPCP portal data submitted by practices to CMS.

Notes: N = 375 MDPCP practices. We define hospital follow-up as follow-up within one week for patients discharged from the ED and within two days for patients discharged from the hospital.

ED = emergency department;
MDPCP = Maryland Primary Care Program.

b. Care management

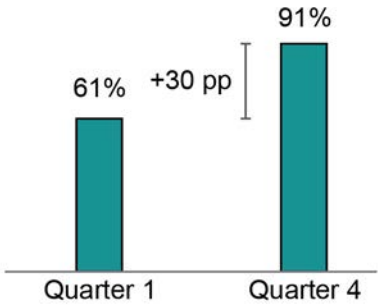
Within MDPCP, care management is defined as long-term and proactive care meant to complement routine and acute visits. Care management often consists of regular and proactive telephonic outreach from a care manager, especially during periods of illness

exacerbation (Center for Medicare & Medicaid Innovation 2021). At the start of the model, 19 percent of all practices and close to a third of non-system practices (29 percent) reported they did not have a care manager. In addition, more than half of practices (56 percent) used care managers employed by another organization and located either internally (at the practice) or externally (outside the practice).

Practices used care management fees and CTO support to provide care management. Many practices reported using their care management fees to hire medical assistants (74 percent), registered nurses (36 percent), or both; these employees frequently take on care management roles. For example, one practice reported to CMS that it used the care management fees to "expand our care management team to 3 part-time care managers, who are managing over 25 percent of our Medicare beneficiaries." In addition, practices that partner with a CTO get access to care managers. One practice reported that the "care management team from the CTO visits the practice on a regular basis[,] receives referrals from the physicians at the site, [and] proactively reviews the risk stratification data to identify patients that would benefit from care management."

Throughout 2019, a growing share of practices provided care management to high-risk beneficiaries (61 percent in quarter one, growing to 91 percent in quarter four) (Figure 4.8). Of the practices that provided care management, a median of 6 percent (33 patients) of empaneled Medicare FFS patients were receiving care management services. Prior studies suggest that 3 to 5 percent of the total patient population should be designated as high risk, and, among that population, anyone willing to receive care management services should be connected to those resources (Hayes et al. 2016; Cohen and Yu 2012). Because MDPCP focuses on Medicare FFS patients, who tend to be older, we expect there is room for improvement in engaging patients in care management to see reductions in hospital and ED utilization.

Figure 4.8. Practices made progress providing care management to at least some patients



Source: Mathematica's analysis of 2019 MDPCP portal data submitted by practices to CMS.

Notes: N = 375 (quarter one) and 373 (quarter four) participating MDPCP practices.

MDPCP = Maryland Primary Care Program; pp = percentage points

c. Risk stratification

To help identify patients who would benefit from care management, MDPCP requires Track 2 practices to implement a two-step risk stratification process, which includes clinical intuition and a data-driven approach such as an algorithm. By the end of quarter four, many practices (70 percent) reported using two-step risk stratification, which was a 28-percentage-point increase from the first quarter. Most of this growth came from practices that previously used a data-driven or care team intuition-only approach.

To help practices plan for providing management services, all practices gained access to a new tool—called the Pre-AH Model tool—to identify patients at risk for avoidable hospital and

emergency use. This tool uses artificial intelligence to predict utilization using claims, demographics, diagnoses, and social data.

4.4.3. Comprehensiveness and coordination

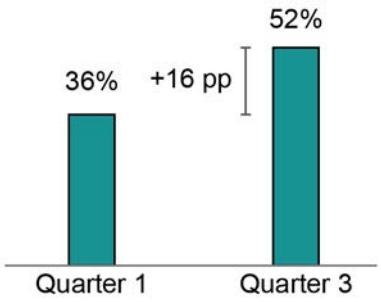
MDPCP encourages practices to be at the center of coordinating patient care across the care continuum. Well-coordinated care between primary care, behavioral health, and other specialists can improve patients' care and health outcomes. In 2019, participating practices reported progress integrating behavioral health in primary care, screening patients for social needs, and referral management. Despite progress integrating behavioral health supports in the practice, almost half of practices were not able to address behavioral health concerns within their practice at the end of 2019.

a. Behavioral health integration

At the beginning of the model, few practices had experience providing behavioral health services in the practice setting or integrating behavioral health. To address behavioral health concerns, many practices (73 percent) provided behavioral health through referrals to external behavioral health specialists.

By the end of 2019 quarter three, about half of practices reported at least some patients were seen in the primary care practice to address their behavioral health concerns, which was up from 36 percent of practices at the beginning of the model (Figure 4.9). Practices took important steps to support behavioral health integration in the primary care practice by training existing practice staff or hiring behavioral health support staff. Despite progress integrating behavioral health supports, many patients who could benefit from this service did not receive it; in all, 48 percent of practices reported that none of their patients with behavioral health concerns had access to behavioral health supports in the primary care practice.

Figure 4.9. About half of practices saw at least some patients with behavioral health concerns in the practice setting



Source: Mathematica's analysis of 2019 MDPCP portal data submitted by practices to CMS.

Notes: N = 375 (quarter one) and 371 (quarter three) participating MDPCP practices.

MDPCP = Maryland Primary Care Transformation Program; pp = percentage points.

To help practices integrate behavioral health, some CTOs provided behavioral health specialist staff, including social workers. These staff also assisted in assessing eligibility for community resources that address health-related social needs.

Maryland partnered with an independent contractor to help practices implement Screening, Brief Intervention, and Refer to Treatment (SBIRT), an evidence-based tool to identify patients who use alcohol and other drugs at risky levels, to provide brief interventions within primary care and to refer patients for more extensive treatment. Close to half of practices (46 percent) reported that SBIRT was available at their practice at the end of 2019. This effort aligns with statewide efforts in the SIHIS on opioid dependency (see Chapter 5). In particular, the state provided a free

SBIRT implementation contractor to all participating practices. The state also provided educational webinars around using the SBIRT to help practices engage and use the tool. Ideally, if practices use the SBIRT, the state would theoretically see reductions in opioid dependency, which would help both the SIHIS and MDPCP goals.

b. Screening for unmet health-related social needs

By the end of 2019, most practices (88 percent) screened patients for unmet health-related social needs (up from 64 percent in quarter one). Although doing so is only a Track 2 requirement, practices in Tracks 1 and 2 made progress in this area. In particular, more Track 1 practices screened a targeted subpopulation (compared with not screening any patients) and more Track 2 practices screened all beneficiaries (compared with screening only a target subpopulation) from the beginning to the end of 2019. To assist with this effort, the MDH encouraged practices to use a community-based electronic referral system included as part of the CRISP suite of tools.

Although there was growth throughout 2019, close to a quarter of practices reported having no established relationship with social service resources and supports, signaling that the practices still have opportunities to move beyond screening patients for unmet health-related social needs toward partnering and connecting patients with social service resources in future years.

c. Referral management

At the beginning of the model, more than half of practices reported they had not yet implemented referral management for patients, and another 20 percent reported they implemented this work with challenges. By the end of 2019, most practices (92 percent) provided referral management (up from 52 percent in quarter one). Although system-affiliated practices were less likely to have implemented referral management processes than independent practices in quarter one (35 versus 68 percent), more than 90 percent of both system and non-system affiliated practices provided referral management by the end of 2019. Practices most commonly reported coordinated referral management with cardiology (83 percent), gastroenterology (74 percent), and orthopedic surgery (62 percent).

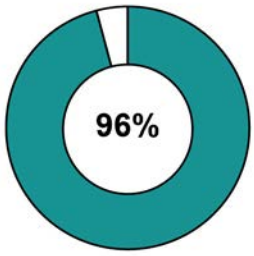
4.4.4. Patient and caregiver engagement

MDPCP encourages practices to improve patients' and caregivers' experience through thoughtful engagement strategies that put patients and families at the center of care. Most practices hosted a patient and family advisory council (PFAC) for the first time in 2019, and many practices reported progress in engaging patients more broadly in quality improvement work. To support practices in meeting this requirement, the Maryland Health Care Commission developed resource guides describing strategies and tools for convening PFACs, and convened focus groups to encourage peer-to-peer learning. In 2020, the MHCC focus groups included discussion around strategies for hosting virtual PFACs during the COVID-19 pandemic.

PFACs are designed to solicit advice from patients about ways to improve their experience and quality of care at the practice and can serve to generate quality improvement projects. At the beginning of the model, most practices (89 percent) reported they had not yet implemented

PFACs. But by the end of the year, virtually all practices (96 percent) held one or more PFACs (Figure 4.10). CTOs supported some practices by offering practice transformation specialists to help practices facilitate PFACs, including providing a project plan and toolkits for implementation. Although most practices implemented PFACs, fewer practices reported they incorporated PFAC recommendations into practice (60 percent), communicated PFAC recommendations to beneficiaries (60 percent) or developed a sustainability plan for the PFAC (44 percent), which could represent areas of growth for practices in future years.

Figure 4.10. Most practices held PFAC meetings



Source: Mathematica's analysis of 2019 MDPCP portal data submitted by practices to CMS.

Note: 356 of 371 MDPCP practices held PFAC meetings.

MDPCP = Maryland Primary Care Program; PFAC = Patient and family advisory council.

In addition to PFACs, practices reported broader gains engaging patients and caregivers. By the end of 2019, the number of practices grew that reported they often or always engaged patients and caregivers in establishing improvement projects (43 percent in quarter four up from 12 percent in quarter one) or in communicating results of improvement projects (42 percent in quarter four up from 14 percent in quarter one). Engaging patients and caregivers in improvement projects could help drive practice changes in areas of greater concern to patients.

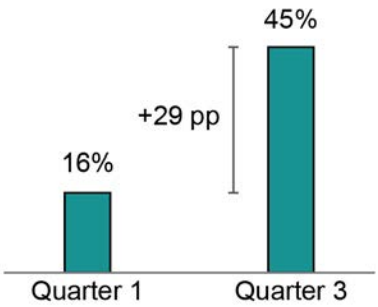
4.4.5. Planned care for health outcomes

MDPCP encourages practices to engage in quality improvement activities to proactively meet the care needs of their entire patient population. These activities include using data (clinical, claims, or both) to track whether patients receive appropriate care for specific conditions (for example, whether patients have blood pressure under control) and using teams—not only individual providers—to help identify and fill gaps in care. In the first year of the model, practices made progress leveraging care team meetings to support planned care and population health. We did not observe changes in practices' use of data for quality improvement. At baseline, most practices reported access to key data sources and specific measures they were already tracking for quality improvement.

a. Using care teams

By the end of 2019, almost half (45 percent) of practices had care team meetings at least weekly to discuss high-risk beneficiaries and planned care, which was up from 16 percent at the start of MDPCP (Figure 4.11). These meetings were not necessarily new; most of these gains came from practices that increased the frequency of their meetings from at least monthly to at least weekly.

Figure 4.11. Practices made progress in holding weekly care team meetings on high-risk beneficiaries



Source: Mathematica's analysis of 2019 MDPCP portal data submitted by practices to CMS.

Notes: N = 375 (quarter one) and 371 (quarter three) participating MDPCP practices.

MDPCP = Maryland Primary Care Program; pp = percentage points.

b. Using data for quality improvement

There were no notable reported changes in using data for quality improvement. In the beginning of the model, most practices had access to electronic clinical quality measure data, and many practices had access to claims data from CMS and beneficiary experience data. Practices generally reported that they reviewed these data at least quarterly. Throughout 2019, 97 percent of practices focused their quality improvement work on diabetes, blood pressure control, and ED use—which are some of the measures the PBIP incentivizes. Despite reporting high levels of using data for quality improvement work at baseline, many practices that partnered with a CTO (78 percent) reported that they received support on the use of data to support continuous quality improvement from their CTO partner.

Chapter 5. Model Implementation: Actions by State Agencies to Meet Cost and Population Health Goals

Key takeaways

Actions to meet cost goals

- By controlling hospital budget growth, the HSCRC plays a large role in determining whether the MD TCOC Model generates savings to Medicare.
- In 2019, the state generated savings ($365 million) to Medicare that well exceeded the target ($120 million) for the year.[25] This means that actual spending in Maryland was $365 million lower than would have occurred if Maryland's spending in 2013 had grown at the same rate as the rest of the nation in Medicare spending. Most of the savings in 2019 ($277 million) came from Maryland's lower-than-the-national-growth rate in earlier years (2014 to 2018), and an additional $88 million came from its lower-than-the-national-growth rate in 2019.
- The HSCRC's decisions on how to set hospital budgets directly impact hospital profits and ultimately the model's sustainability. Hospital profitability declined marginally in the first year of the MD TCOC Model, but hospitals in Maryland remain in good financial health overall, similar to the MDAPM period.
- Hospital global budgets protected hospitals financially from the significant declines in volumes that have occurred during COVID-19, which, in an FFS environment, would have decreased hospital revenue.

Actions to meet population health goals

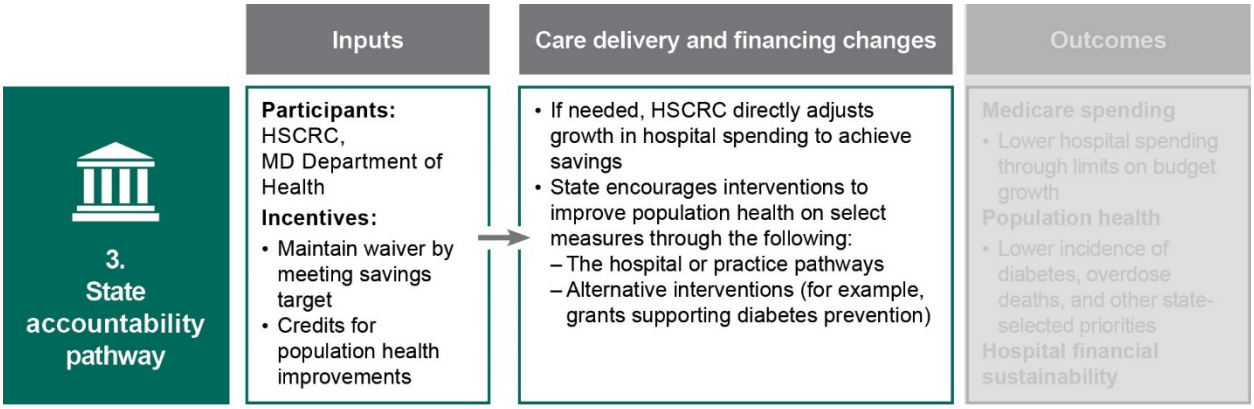
- Two related components of the MD TCOC Model—Outcomes-Based Credits and state commitments under the SIHIS—encourage the state to improve population health. For each of these components, Maryland has, or intends to, set goals related to preventing diabetes and reducing opioid use disorders.
- To help accomplish these population health goals, Maryland is implementing new initiatives targeted at hospitals, community organizations, and MDPCP practices.
  - These initiatives include a Regional Partnership Catalyst Grant program for hospitals that have partnered with community stakeholders, adding new quality measures for MDPCP practices, and providing those practices with support to integrate an early intervention approach for people with substance use disorders.
  - These new initiatives build on existing state programs, which, although not a direct result of the MD TCOC Model, could still help Maryland achieve its population health goals.

[25] These are savings based on methods described in the MD TCOC state agreement, which compare Maryland spending to a benchmark. They are not the evaluation estimates of model impacts using a matched comparison group. Those estimates will appear in future reports.

5.1. Focus of this chapter

This chapter focuses on the third pathway in the logic model (Figure 5.1): state actions to reduce Medicare spending and improve population health. Because the HSCRC sets hospital spending and quality improvement policy in the state, it plays a direct role in determining whether the model will impact Medicare spending and quality improvement goals (We discussed HSCRC's role in setting hospital-quality improvement incentives in Chapter 3). HSCRC's budget decisions also determine the extent to which any successful efforts to reduce hospital volumes in the hospital or primary care pathways translate into hospital margins (where savings are recouped by the hospitals) versus reductions in Medicare spending (where savings accrue to Medicare). HSCRC, the MDH, and other state agencies also play central roles in setting population health goals for the model, including the recent SIHIS, and in supporting interventions that can improve population health.

Figure 5.1. Logic of the state accountability pathway



Note: In this chapter, we focus on the parts of the model logic that are not shaded gray in the figure.

HSCRC = Health Services Cost Review Commission; MD = Maryland.

5.2. HSCRC decisions on how to set hospital budgets to meet savings targets

HSCRC plays a large role in determining whether the MD TCOC Model generates savings to Medicare and other payers. Hospital spending (inpatient and outpatient) accounts for about 55 percent of all Medicare spending in the state, and HSCRC directly determines how much this spending will grow each year. Therefore, whether the MD TCOC Model generates savings depends to a large degree on how HSCRC sets growth in hospital spending.

When HSCRC sets budgets, it largely aims to ensure that hospitals receive adequate funding and that the state meets its savings targets in the state agreement (see text box). Although we anticipate that efforts to meet savings targets could also generate model impacts, as we define it for the evaluation, that is not necessarily the case. As we discuss in Chapter 1, we define model impacts as the difference between the actual outcomes in Maryland and what would have happened in Maryland absent the model. The state could meet savings targets without impacting spending if the model does not prompt any reductions in spending beyond what would have occurred without the model. In this chapter, we focus on HSCRC's efforts to monitor and meet savings targets.

MD TCOC Model savings targets

1. All-payer hospital spending growth is less than or equal to the long-term economic growth in the state, 3.58 percent
2. Total Medicare spending meets annual savings targets of $120 million in 2019, increasing to $300 million by 2023, relative to a 2013 base year trended forward at the national Medicare growth rate
3. Total Medicare spending growth does not exceed the national Medicare growth rate by more than 1 percent in any one year or more than national spending growth by any amount for two consecutive years.

HSCRC has an annual process for setting the growth in hospital spending and for assessing whether the state will likely meet savings targets set in the MD TCOC agreement. Each year, HSCRC sets budgets for all regulated hospitals by considering the implications for statewide hospital spending across all payers. It increases budgets each year for inflation and make a series of other smaller adjustments, such as changes in expected utilization because of shifting demographics. After adjusting, HSCRC assesses whether the resulting hospital and non-hospital spending is likely to meet the MD TCOC savings targets.

One feature new to the MD TCOC Model is that the HSCRC calculations must include non-hospital spending. The Maryland All-Payer Model agreement only required that the state meets savings targets for per capita hospital spending, which HSCRC could largely guarantee because it—through global budgets—set the growth in hospital spending. Now, HSCRC must also project how much non-hospital spending is likely to grow, factoring in MDPCP payments. Then, HSCRC assesses whether, with the planned growth in hospital budgets and the projected growth in non-hospital spending, the state is likely to meet its savings commitments.

5.2.1. Meeting state savings targets in 2019

In the first year of the MD TCOC Model, the state generated savings that well exceeded targets. By directly setting hospital budget growth, HSCRC kept all-payer hospital spending growth to just 2.51 percent, below the 3.58 percent target. The state also met its guardrail spending target with growth in total Parts A and B Medicare spending per beneficiary that was 0.6 percentage points lower than the rest of the nation (3.4 percent versus 4.0 percent). This was driven largely by a smaller increase in per beneficiary Part A spending compared with the rest of the nation (CMS 2020).

In total, Maryland generated $365 million in savings to Medicare in 2019, well above the 2019 target of $120 million. This means that actual spending in Maryland was $365 million lower than would have occurred if Maryland's spending in 2013 had grown at the same rate as the rest of the nation in Medicare spending. Most of the savings in 2019 ($277 million) came from Maryland's lower-than-the-national-growth rate in earlier years (2014 to 2018), and an additional $88 million largely came from its lower-than-the-national-growth rate in 2019. The savings calculations for 2019 include MDPCP non-claims-based payments (that is, payments made by CMS to participating practices) for Maryland as well as the CPC+ non-claims-based payments for the rest of the nation. Overall, total savings were smaller in Maryland for Part B than Part A

in 2019, but the Part B savings are still notable since MDPCP payments are likely to be larger in Maryland than comparable CPC+ payments since CPC+ is not implemented in the entire nation.

Despite the challenges of a new focus on total cost of care, Maryland is well positioned to achieve the current model agreement savings targets now and in the future. In fact, the state could set hospital growth rates in Maryland equal to expected national rates and still meet all model agreement savings targets through 2023, assuming HSCRC's projections about national growth are close to observed growth. Supporting the state's strong position, as a result of banked and continued savings, the state has not had to use the MPA Savings Component, which HSCRC designed as a direct budgetary adjustment mechanism to correct budgets so they meet Medicare savings targets. Further, the state has not had to use Outcomes-Based Credits to offset any of its savings requirement to meet savings goals.

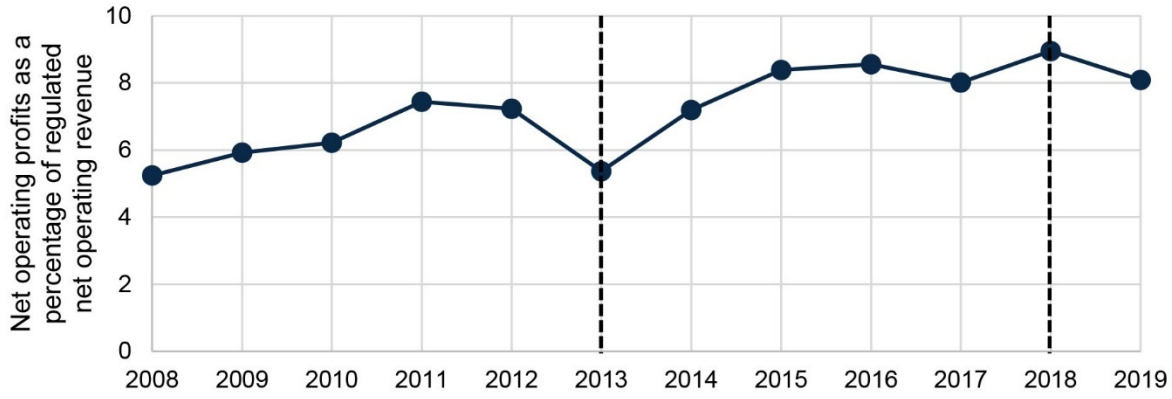
But even if Maryland *could* meet savings targets without generating new incremental savings, there are several reasons why the state has an incentive to continue to generate new savings. First, the guardrail savings target that requires total Medicare spending to grow slower than national Medicare spending encourages the state to be conservative in its rate setting; it does not set non-hospital spending, and it cannot know national growth ahead of time. In addition, the state might have incentives to exceed expectations, either to position itself well for future model updates or to demonstrate the effectiveness of its many ongoing initiatives. Finally, evidence from the MDAPM suggests the state is willing and able to reduce spending beyond contractual savings targets even without an explicit requirement to do so. In the MDAPM, Maryland achieved $1.4 billion in savings on hospital spending over four years—well above the target of $330 million.

5.2.2. Hospital operating margins in fiscal year 2019

HSCRC's decisions about budget increases will also influence hospital margins and the overall sustainability of the MD TCOC Model. The combination of the growth in hospital operating expenses and growth in hospital budgets will determine the hospital's profits on regulated spending. If the model succeeds in reducing acute care volumes, this can improve hospital margins. On the other hand, if operating expenses increase faster than the growth in the global budgets, some hospitals could be financially challenged.

On the whole, hospital margins in 2019 were within range of recent years and remained higher than the years before the MDAPM, suggesting that the state's hospital financial health was reasonable during that time. From fiscal years 2018 to 2019, hospital operating margins from regulated revenue declined from 9.0 to 8.1 percent (Figure 5.2). Declines in regulated margins are likely partly because of the state's smaller update to global budgets in fiscal year 2019 than in recent years (for example, 1.62 in fiscal year 2019 versus 2.77 in fiscal year 2018) (HSCRC 2017, 2018). The smaller 2019 update was driven by a somewhat smaller update to inflation as well as larger reductions to the budget because of potentially avoidable utilization and quality incentive programs.

Figure 5.2. Hospital margins as a percentage of regulated net operating revenues



Source: HSCRC's Hospital Financial Condition Reports (HSCRC 2021a).

Notes: The first dotted line indicates the start of the Maryland All-Payer Model, and the second dotted line indicates that start of the MD TCOC Model. Regulated revenues are hospital revenues that fall under HSCRC's rate-setting authority. Most hospital services provided to patients are regulated. Other revenues, such as those generated from parking or retail are unregulated, and not included in regulated net operating revenues.

HSCRC = Health Services Cost Review Commission.

5.2.3. Global budget stability and risks during the COVID-19 pandemic

Hospital global budgets in Maryland help protect hospitals financially from major shocks to health care such as the COVID-19 pandemic. In much of the country, hospital volumes declined significantly beginning in March 2020 as people avoided going to the hospital because of stay-at-home orders, concerns of contracting COVID-19 in the hospital, and some hospitals canceling elective procedures. These volume declines translated into lost fee-for-service revenue for the hospitals. In contrast, Maryland's budgets are fixed, and hospitals could receive their full anticipated revenues, despite declines in hospital volumes.

HSCRC adjusted several of its policies to respond to COVID-19 and allow hospitals maximum flexibility and stability during the pandemic (HSCRC 2020c). Logistically, Maryland's hospitals still receive payment on a fee-for-service basis but with the unique ability to adjust prices up or down to meet global budgets. Before the pandemic, HSCRC capped the amount hospitals could increase prices for a specific service category in a given rate year at 5 percent unilaterally or 10 percent (with HSCRC approval). As a matter of policy, during the pandemic, HSCRC relaxed these corridors to 10 percent without permission on any service and 20 percent for inpatient care centers. In addition, early in the pandemic, HSCRC guaranteed a hospital's undercharge amount (that is, the difference between their allocated global budget and the amount of revenues realized for rate year 2020, ending in June 2020). This means that hospitals can roll over a portion of their rate year 2020 budget into rate year 2021 if they could not increase prices enough to recoup the full budget in 2020, even with the expanded corridor policy. Both policies should also include the first half of rate year 2021 (July to December 2020) and perhaps more, depending on the trajectory of the pandemic.

Complicating the picture of global budgets somewhat is that federal funding for hospitals through the CARES Act provided financial support to hospitals in Maryland, as it did elsewhere in the county. In total, HSCRC estimates that Maryland hospitals received about $1.2 billion in CARES Act funding. As of April 2021, HSCRC is still determining whether to deduct CARES Act funding from the undercharge amount that hospitals can carry over into 2021. HSCRC has proposed policies that would deduct some or all of CARES Act funding from carryover amounts, but some hospitals have argued this is premature, because the federal government might require that they return some or all of their CARES Act funding, a decision not yet made nationally.

So far, global budgets combined with CARES Act funding appear to have helped hospitals fare better financially during COVID-19 than in earlier years. An early look at unaudited financial statements from July to November 2020, compared with July to November 2019, indicates that both regulated (8.1 versus 6.4 percent) and total (4.8 versus 2.6 percent) profit margins increased in 2020, suggesting strong financial health during the pandemic (HSCRC 2021b).

5.3. Actions by state agencies to meet population health goals

5.3.1. MD TCOC Model population health goals

To identify population health priorities for Outcomes-Based Credits and for the SIHIS, HSCRC collaborated closely with the MDH and the Opioid Operational Command Center under the Office of the Governor.[26] These state agencies also engaged diverse stakeholders to get broad expert input on selecting related outcome measures, goals, and statewide initiatives.

Two sources for population health goals

- The MD TCOC Model has two complementary sources for population health goals: Outcomes-Based Credits and the SIHIS population health domain.
- Improvements in Outcomes-Based Credits can reduce the total savings the state needs to achieve in the MD TCOC Model.
- Improvements in the population health goals of the SIHIS are not linked to reductions in total savings. Achieving these goals, however, is important to the state fulfilling its commitments under the MD TCOC Model.

Maryland is focusing on population health improvements in diabetes-related outcomes and in opioid use disorder for Outcomes-Based Credits and as part of the SIHIS (Table 5.1). Although the only Outcomes-Based Credit that CMS has approved is reductions in diabetes incidence, the state is actively working to propose a second opioid-related outcome measure.[27] Within the population health domain of SIHIS, the state has identified goals related to reductions in mean adult BMI and reductions in overdose mortality rates. The state deliberately selected distinct but complementary outcome measures for Outcomes-Based Credits and for the population health domain of the SIHIS; the outcome measures for each condition relate to different points in the respective disease course that can be modified through clinical and community interventions. Maryland also identified improvements in outcome measures related to maternal and child health as a SIHIS population health priority because of the potential for

[26] We discuss these two sources of population health goals further in Chapter 1.

[27] The state does not distinguish between type 1 and type 2 diabetes for the purposes of the population health goals because most public health surveillance data do not differentiate the two types. Type 2 diabetes, however, accounts for 95 percent of the diabetes surveillance data (Maryland Department of Health 2020).

improvement in this area (HSCRC 2020l). But because improvements in maternal and child health will not result in savings to the Medicare program (which is a requirement for Outcomes-Based Credits), the state did not identify a corresponding Outcomes-Based Credit measure.

In the following section, we describe initiatives Maryland is implementing to meet its population health goals based on document reviews and interviews with HSCRC, the MDH, and the Maryland Opioid Operational Command Center. Because the state submitted its SIHIS population health goals to CMS at the end of 2020, progress toward those goals has been limited.

Table 5.1. Maryland population health outcome measures

Health area	SIHIS population health measures	Outcome-based credits measures
Diabetes	Change in mean body mass index in the population of adult Maryland residents compared with a cohort of states with similar body mass index trajectories and demographics	Diabetes incidence rate per 10,000 adults
Opioid use disorder	Change in overdose mortality compared with a cohort of states with historically similar overdose mortality rates and demographics[a]	*Under development*
Maternal and child health	Severe Maternal Morbidity Rate per 10,000 delivery hospitalizations Annual asthma-related emergency department visit rate per 1,000 for ages 2 to 17	*Not applicable*

[a] Although Maryland is focused on overdose mortality broadly, most overdoses in the state involve opioid use.

SIHIS = Statewide Integrated Health Improvement Strategy.

5.3.2. State initiatives to reduce mean body mass index among adults and the incidence of diabetes

To reduce the mean BMI among Maryland adults and the incidence of diabetes, Maryland is building on previous efforts and its recently published Diabetes Action Plan to implement a Regional Partnership Catalyst Grant Program focused on diabetes prevention, referral tools for diabetes prevention programs, and a new quality measure for MDPCP practices. Before the implementation of the MD TCOC Model in 2019, there were disparate state efforts to improve diabetes outcomes, including individual hospital diabetes programs, various diabetes management programs, and a Medicaid-focused Diabetes Prevention Program (DPP) pilot.[28] In June 2019, Maryland's secretary of health made diabetes prevention and management a statewide priority and established a diabetes action team to develop the Diabetes Action Plan. The plan describes existing diabetes initiatives in Maryland and proposes a statewide coordinated approach to improve diabetes outcomes (Maryland Department of Health 2020). In addition, the MDH Office of Population Health Improvement is expanding its public education campaign on the risks of and available testing for prediabetes, is engaging employers to make changes to reduce the risk that their employees will develop diabetes, and has issued grants to Local Health Improvement Coalitions to support local diabetes-focused initiatives.[29]

[28] The DPP is now a covered benefit for Maryland Medicaid enrollees.

[29] Information about Local Health Improvement Coalitions is available at https://pophealth.health.maryland.gov/Pages/LHIC.aspx.

a. Regional Partnership Catalyst Grants for diabetes prevention

In addition to these efforts, HSCRC launched the Regional Partnership Catalyst Grant Program in January 2021. The grant program is supported by HSCRC's authority under the MD TCOC Model to set all payer hospital global budgets. Specifically, HSCRC approved an annual investment of 0.25 percent of statewide all-payer hospital revenue (about $45 million annually). The grant amounts will be added to hospital annual rates as temporary adjustments (HSCRC 2020a). The grant program has two tracks: one focused on diabetes prevention and another focused on behavioral health (discussed below). Within the diabetes prevention track, HSCRC awarded six different five-year grants to hospitals that have partnered with community organizations to increase National DPP provider capacity throughout Maryland and to develop and promote diabetes self-management training programs.[30] The Regional Partnerships for diabetes prevention involve a median of 3.5 hospitals and 20 community partners (Table 5.2). The most common types of community partners are local health departments, Local Health Improvement Coalitions, community organizations focused on diet and exercise, faith-based organizations and charities, private companies (ride share companies, grocery stores, and pharmacies), community clinics, and relevant medical associations (HSCRC 2020k).

To increase the likelihood that funded programs are successful and sustainable by the end of the grant program, HSCRC set specific scale targets related to National DPP provider capacity and diabetes self-management training as a condition of continued funding (HSCRC 2020j). These targets are meant to apply to the diverse types of interventions deployed by funded Regional Partnerships. For example, the scale targets related to National DPP provider capacity specify the percentage of the population with prediabetes within the Regional Partnership's service area that are referred to a National DPP, that enroll in a National DPP, that complete a National DPP, and that experience weight loss. By year 5, regional partnerships are expected to refer 40 percent of the population with prediabetes within their service area to a National DPP, to enroll 12 percent, to have 6.6 percent complete the program, and to have 1.8 percent experience at least a 5 percent weight loss. Because Regional Partnerships can bill Medicare for DPP enrollment, increased enrollment should help support the sustainability of these programs.

b. Chesapeake Regional Information System for our Patients electronic referral tool for diabetes prevention programs

To support the Regional Partnerships focused on diabetes prevention, CRISP is refining its electronic referral tool to improve data sharing between hospitals, practices, and community organizations. Although the referral tool is currently available in a pilot phase, CRISP is making several enhancements to it, including increasing the number of options available for sending DPP referrals as new programs are established across the state as well as for sending referrals to community organizations that address social needs such as food insecurity.[31] The updated

[30] The National DPP was developed by the Centers for Disease Control and Prevention and designed to be implemented in community settings to reduce the burden of type 2 diabetes and prediabetes. The core element of the program is a one-year lifestyle change program. Additional information is available at https://www.cdc.gov/diabetes/prevention/details-about-the-program.html.

[31] The referral tool is currently being used in Southern Maryland by the PreventionLink group, which is a five-year project that spans four counties in the state and aims to improve access to prevention and treatment resources for priority populations with diabetes, cardiovascular disease, or stroke. Additional information is available at https://preventionlinkmd.com/.

referral tool will be available to all Regional Partnerships, MDPCP practices, and Medicaid Managed Care Organizations in 2021.

c. Maryland Primary Care Program body mass index–related quality measure

To engage practices in efforts to improve BMI and reduce diabetes incidence, in January 2021, MDPCP, in consultation with CMS, added a new quality measure for participating practices that requires practices to report the percentage of adult patients that have a BMI measurement documented during a visit and, among those with a BMI outside of the normal parameters, that have a documented follow-up plan.[32] Practices' performance on this quality measure will influence the amount of the PBIP they are able to retain. The MDH provided a performance measurement guide and hosted a webinar to assist practices with measure implementation. It is also working with external partners, including a regional Medicare quality improvement organization, Qlarant, and the American Diabetes Association, to provide additional technical assistance. Based on these changes, the state anticipates an increase in the percentage of patients with an elevated BMI who have a documented follow-up plan within the next two years.

Table 5.2. Participation in the Regional Partnership Catalyst Grant Program (2021 to 2025)

	Diabetes	Behavioral health
Total number of grants	6	3
Median number of hospital participants	3.5	4
Median number of community partners	20	13
Median size of grant	$9,628,025	$22,889,722
Total amount of grants	$86,360,644	$79,068,054

Source: Health Services Cost Review Commission 2020d.

5.3.3. State initiatives to reduce overdose mortality

To reduce overdose mortality, Maryland funded Regional Partnership Catalyst Grants to support behavioral health crisis programs and is helping MDPCP practices implement an early intervention approach for people with substance use disorder. The state first prioritized opioid use disorder in 2015 when the MDH established the Heroin and Opioid Emergency Task Force and the Inter-Agency Heroin and Opioid Coordinating Council. In 2017, Maryland's governor declared a state of emergency on heroin and opioid use disorder, established the Opioid Operational Command Center within the Coordinating Council to align state efforts, and committed $50 million in state general funds over five years to address the opioid crisis. The Opioid Operational Command Center uses a portion of these state funds to support two grant programs aiming to improve opioid-related outcomes, and it has published an Inter-Agency Opioid Coordination Plan that identifies state priorities, actions, and goals (Inter-Agency Heroin and Opioid Coordinating Council 2020). In addition to state resources, Maryland receives funding from the Substance Abuse and Mental Health Services Administration's State Opioid Response Grant program to increase access to prevention, treatment, and recovery services as well as from other federal agencies including the U.S. Department of Labor.[33] In 2019,

[32] Additional information on this National Quality Forum–endorsed quality measure (NQF 0421) is available at https://qpp.cms.gov/docs/QPP_quality_measure_specifications/CQM-Measures/2019_Measure_128_MIPSCQM.pdf.

[33] More information about the State Opioid Response Grant program is available at https://www.samhsa.gov/grants/grant-announcements/ti-20-012.

Maryland's governor established the Commission to Study Mental and Behavioral Health, which includes a Crisis Services Subcommittee that evaluates crisis service availability in the state. The new initiatives the state is implementing under the MD TCOC Model build on these existing programs and the priorities identified in the Inter-Agency Opioid Coordination Plan.

a. Regional Partnership Catalyst Grants for behavioral health crisis programs

HSCRC awarded three five-year Regional Partnership Catalyst Grants to hospitals and their community partners to support the expansion of behavioral health crisis services that leverage the Crisis Now framework.[34] The goal of this track of the grant program is to promote the treatment of people with behavioral health issues in appropriate community settings rather than in EDs (HSCRC 2020j). These grants focus broadly on mental health and substance abuse because the state recognized that the two are often closely related; by addressing behavioral health and substance abuse in the community, the state aims to reduce overdose mortalities. The Regional Partnerships for behavioral health crisis programs involve a median of 4 hospitals and 13 community partners (Table 5.2). The most common community partners are local departments of health, social services, corrections, and courts, Local Health Improvement Coalitions, local behavioral health authorities, public school systems, community organizations, community clinics, private payers, and medical associations (HSCRC 2020k).

As with the Catalyst Grants for diabetes prevention, HSCRC set specific scale targets for the crisis services as a condition of continued grant funding (HSCRC 2020j). These targets focus on reducing ED wait times or boarding times and reducing repeat ED utilization for behavioral health issues. By year 5, regional partnerships are expected to reduce repeat ED visits for behavioral health issues by 10 percent within their service area.[35] Cost savings from reductions in ED visits will help the state justify continued financial support for established programs.

b. Maryland Primary Care Program practices are implementing an early intervention approach to substance use disorder

The MDH contracted the Mosaic Group to help MDPCP practices integrate the SBIRT approach into their workflows to identify people with substance abuse disorder and intervene early. This initiative builds on a prior partnership between the state and the Mosaic group to implement SBIRT in EDs. SBIRT is an evidence-based approach that involves systematically screening patients for substance use, briefly intervening when patients are at risk for substance abuse by providing information about substance use disorder and increasing motivation to avoid substance use, and then referring people to specialty care services if they require more extensive treatment (Agerwala and McCance-Katz 2012). Although integrating SBIRT is voluntary, the state has set a goal of having at least 200 practices integrate SBIRT into their workflows by the end of 2021. In 2019 and 2020, a total of 148 MDPCP practices integrated and began using the SBIRT approach, meaning the state aims to engage at least 52 more practices in 2021.

[34] The Crisis Now framework is an evidence-based approach to behavioral crisis management that relies on three components to address behavioral health needs in the community: crisis call centers, mobile crisis teams, and short-term crisis stabilization locations. More information is available at https://crisisnow.com/.

[35] The state is still setting specific scale targets related to emergency department wait and boarding times.

Chapter 6. Conclusion and Next Steps for the Evaluation

6.1. Conclusion

In its first two years (2019 and 2020), the MD TCOC Model has engaged a wide range of providers and begun to transform care outside the hospital.

- All-payer hospital global budgets, which started under the MDAPM, have continued to provide strong incentives to hospitals to reduce avoidable care, including shifting care to less-intensive settings.
- By 2020, almost half of hospitals had begun partnering with skilled nursing facilities, home health agencies, or other post-acute care providers to improve the quality and efficiency of episodes of care. The reach of these episode programs has been limited so far, affecting less than 5 percent of discharges in 2019, but it is likely to grow as more hospitals join episode programs and expand the number and types of episodes they participate in.
- MDPCP has engaged primary care providers throughout the state, reaching 29 percent of primary care physicians and almost half (47 percent) of all Medicare FFS beneficiaries. Further, in 2019, practices self-reported significant gains in several domains, such as expanding access in the evening and on weekends and doubling the rate of timely follow-up after hospital discharge.
- In 2019, the state generated savings ($365 million) to Medicare that well exceeded the target ($120 million) for the year. Most of the savings in 2019 ($277 million) came from Maryland's lower-than-the-national-growth rate in earlier years (2014 to 2018), and an additional $88 million largely came from its lower-than-the-national-growth rate in 2019.[36]
- HSCRC, the MDH, and other state agencies have set clear population health goals and introduced new incentives and supports to help achieve them. For example, MDPCP is integrating diabetes prevention into its quality measures for practice incentive payments. HSCRC is using its all-payer rate-setting authority to fund grants to hospitals and their community partners to reduce diabetes incidence and improve behavioral health care services for those in crisis.

Taken together, this engagement and care transformation can potentially improve targeted outcomes, capitalizing on the substantial room for improvement present at the start of the model. Although the state made progress in reducing avoidable hospital use and reducing hospital spending growth during the MDAPM, there remains meaningful room to further reduce avoidable acute care. This is especially true given the state's interest in being a national leader in payment reform to reverse traditional FFS incentives and to drive avoidable utilization well below national averages. Further, there are substantial opportunities for improvement in areas newly targeted in the model, including reducing non-hospital spending, improving care coordination across providers, improving ambulatory care to reduce avoidable admissions, and reducing BMI and diabetes incidence. Future evaluation efforts, described in the next section, will assess whether the model achieves these aims.

[36] These savings, which CMS calculated using a formula specified in the legal agreement establishing the MD TCOC Model, are not the evaluation estimates of model impacts using a matched comparison group. Those impact estimates will appear in future reports.

6.2. Next steps for the evaluation

In the next couple of years, the evaluation will proceed on three tracks: (1) continuing to describe the design and implementation of the model, including changes in design and implementation over time; (2) estimating the impacts of the model on targeted outcomes measurable in Medicare claims data and other secondary data; and (3) integrating the implementation and impact findings to describe what might be driving observed impacts. The findings from this Implementation Report will help guide future research in each of these areas.

6.2.1. Model design and implementation

We plan to collect primary data (from interviews and surveys) and continue to collect and analyze secondary program data to describe model design and implementation. Key questions will include the following:

- How does the model design evolve over time, including any addition or expansion of model components to further engage a range of providers? For example, Maryland and CMS are currently considering updating MDPCP to hold practices more accountable for patients' outcomes. They are also considering adding a third track within the CRP that would design episode payments centered on ambulatory specialty care rather than hospital care.
- How do primary care practices, hospitals, and their partners perceive the incentives and supports under the model? What incentives do participants find most compelling and actionable, and how are they responding to those incentives? What factors facilitate or impede participants' efforts to change care delivery and improve outcomes?
- How does the reach of the various model components change over time? For example, does MDPCP continue to expand and reach an increasing share of Medicare FFS beneficiaries in the state? How many Federally Qualified Health Centers, which are newly eligible for MDPCP starting in 2021, join MDPCP, and how many Medicare beneficiaries do these centers serve? Do more hospitals join episode-of-care programs and reach an increasing share of discharges in the state?
- What actions are hospitals and their partners taking outside of the formal programs such as CRP to perform well under the model's incentives? So far, our analysis of hospitals' implementation experiences has been limited to secondary data (that hospitals reported or that CMS or HSCRC generated to operate the programs) for these formal programs. Hospitals and their partners, however, might be taking important actions outside of these formal programs, and primary data collection will help identify those efforts.
- How do state agencies continue to encourage population health improvements, and what helps or hinders progress on these outcomes?
- How does HSCRC monitor future spending trends and decide to set hospital budgets to meet or exceed savings targets, which will have a large influence on whether the model generates savings?

6.2.2. Estimating model impacts

We plan to develop a matched comparison group drawn from geographic areas outside of Maryland to formally estimate model impacts. By impacts, we mean the difference between the outcomes that occur in Maryland during the MD TCOC period (2019 to 2026) and the outcomes

that would have occurred absent the model. As we describe in Chapter 1.1.4, we plan to estimate two types of model impacts: (1) *cumulative* impacts reflecting the impact of all the changes that Maryland has made since the MDAPM began in 2014, including the introduction of global budgets and the expansion of incentives and supports to a wider range of providers under the MD TCOC Model, and (2) *incremental* impacts capturing the effects of the changes that the MD TCOC Model introduced on top of the MDAPM.

We plan to use a difference-in-differences design to estimate impacts on outcomes measurable in Medicare FFS claims and other secondary data in several outcome domains. These domains, which were also captured in the assessment of baseline room for improvement (Chapter 2), will include Medicare spending, service use, quality of care, and population health. The outcome measures in these domains, for which we will estimate impacts, include, for example, overall Medicare Parts A and B spending; hospital admissions and outpatient ED visits, timely follow-up after discharge from the hospital or ED, potentially preventable admissions (a measure of the quality of ambulatory care), patient satisfaction with primary care and hospital care, and diabetes prevalence.[37]

Importantly, our method for estimating impacts on Medicare spending will differ from the method CMS uses to monitor Maryland's adherence to the terms of the state agreement and might result in different conclusions. The method to calculate savings, as described in the state agreement, compares actual spending in Maryland with a benchmark set to 2013 spending trended forward at the national growth rates in Medicare spending. The evaluation, in contrast, will use a matched comparison group to estimate the counterfactual (that is, what would have occurred in Maryland absent the model). We will then estimate impacts as the difference in outcomes between Maryland and the comparison group, adjusting for any differences in outcomes between these groups before the model began. We need a comparison group to capture any changes in outcomes that would be occurring in Maryland even absent the model, enabling us to isolate the true effects of MD TCOC Model. We also need to draw the comparison group from outside Maryland because the MD TCOC Model is statewide, with the potential to affect everyone in the state.

6.2.3. Integrating implementation and impact findings

Finally, we plan to integrate the implementation and impact findings to help explain what factors might be driving the impacts we observe, including variation in impacts across different types of outcomes and subgroups of beneficiaries. We anticipate using the model's logic (Chapter 1.1.3) and the simple framework of conditions necessary for impacts (Chapter 1.1.4) to guide this integration. Specifically, for each of the potential pathways to outcome improvements, we will identify the extent to which three conditions are met: (1) room for improvement for the targeted outcome, (2) significant reach of the model component among the targeted population, and (3) genuine changes in care that can improve the targeted outcomes. This framework, when coupled with implementation data capturing each of these elements, could help to identify what aspects of this complex model are likely contributing to overall impacts.

[37] We plan to estimate impacts on almost all outcomes included in our baseline assessment of room for improvement (Chapter 2) as well as several others identified in the model logic (Chapter 1.1.3). One exception may be BMI, which is only available at the state level; we need higher-quality resolution outcome data to implement our planned methods for impact evaluation.

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Appendix A.

Baseline Room for Improvement: Supplemental Methods and Results

This appendix supplements the findings presented in Chapter 2 by providing additional detail on our methods to develop the adjusted comparisons (Appendix A.1), presenting additional findings and findings in table format (Appendix A.2), and describing how we constructed the outcomes used in these analyses (Appendix A.3).

A.1. Methods for comparing (adjusted) baseline outcomes in Maryland versus other states

For the baseline outcomes analyses of spending, service use, and quality of care, we used Medicare enrollment and claims data for all Medicare fee-for-service (FFS) enrollees nationally. In each year, 2013 and 2018, for each beneficiary, we calculated total spending and utilization rates over all months when a beneficiary met the following criteria: they were alive, they were enrolled in Medicare FFS Part A and B, and they had Medicare as primary payer. We annualized beneficiaries' outcomes and weighted each beneficiary based on the number of months that they met the criteria noted above. We then weighted each of the other 49 states' (and the District of Columbia's) Medicare FFS population to match Maryland's weighted population that year in terms of joint distributions of age, sex, whether they were entitled for Medicare because of disability or end-stage renal disease (ESRD), and illness severity as measured by the Hierarchical Condition Category (HCC) score (divided into quartiles). This adjustment ensures that differences in outcomes between Maryland and the other states are not because of differences in these characteristics. For the within-Maryland analyses, we weighted each region to match the overall Maryland weighted population in 2018 based on the same characteristics used in the cross-state analyses.

For the readmissions analyses, we identified all index admissions among Medicare FFS enrollees and applied similar adjustment methods to ensure that discharges in other states matched discharges in Maryland based on the joint distributions of age, sex, whether they were entitled for Medicare because of disability or ESRD, and illness severity as measured by the HCC score (divided into quartiles). We then did the same for the universe of acute inpatient stays and outpatient emergency department (ED) visits included in the denominator of the timely follow-up after acute exacerbations of chronic conditions measure. For the patient satisfaction analyses using Medicare FFS and Medicare Advantage Consumer Assessment of Healthcare Providers and Systems (CAHPS) data, we applied the survey weights and used similar adjustment methods to ensure the distribution of survey respondents in other states matched the respondents in Maryland based on the joint distributions of age, sex, and whether they were entitled for Medicare because of disability or ESRD. For the population health analyses using the Behavioral Risk Factor Surveillance System (BRFSS) data, we applied the survey weights and used similar direct adjustment methods as described above to ensure that the distribution of survey respondents in other states matched the distribution of Maryland respondents based on age and sex.[38]

We then calculated the adjusted mean performance for each state for each outcome measure and compared Maryland's mean performance on each measure with the distribution of adjusted state

[38] The BRFSS data do not include Hierarchical Condition Category score information and only have a limited number of survey questions related to comorbid conditions, so we only standardized to the distribution of age and sex.

mean performance among the other 50 states (49 other states and the District of Columbia). We also calculated Maryland's rank in 2013 and 2018 relative to all other states (and the District of Columbia) for each measure in the same year.

A.2. Detailed findings for adjusted comparisons of outcomes in Maryland and other states

Table A.1 summarizes Maryland's mean performance in 2013 and 2018 compared with the adjusted mean performance of the other 49 states and the District of Columbia. Table A.2 presents the unadjusted mean performance of the other 49 states and the District of Columbia to help explain the relative importance of the adjustment factors. At a high level, the results are similar with and without adjustment. But for Medicare spending, Maryland's rank is slightly lower without adjustment (for example, Maryland ranked 5th in 2018 on total Medicare FFS spending in the unadjusted results compared with 1st in the adjusted results). Maryland beneficiaries, however, were less likely to be disabled, less likely to be age 85 or older, and had lower disease burden (as captured by HCC scores) than other high cost states. When we standardized the beneficiaries in these higher cost states to match Maryland's beneficiaries, per capita Medicare spending decreased some (decreasing mean spending by $360 to $930 for the top five other high-cost states [New York; New Jersey; Connecticut; California; and Washington, DC]). These decreases changed Maryland's rank so that, after adjustment, Maryland had the highest per capita spending in 2018.

In addition, for actual spending, we calculated mean performance on adjusted actual spending measures for states along the Atlantic seaboard, including Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, and the District of Columbia. These states have generally higher Medicare spending than other states in lower wage regions and with fewer teaching hospitals. Compared with adjusted mean spending among this smaller set of states, Maryland still has higher spending on total mean Parts A and B Medicare spending ($12,185 versus $10,917 in 2013 and $13,037 versus $11,916 in 2018) and total hospital spending ($6,884 versus $5,658 in 2013 and $7,111 versus $6,303 in 2018) but not as much for total non-hospital spending ($5,301 versus $5,258 in 2013 and $5,927 versus $5,614 in 2018).

Table A.1. Maryland's adjusted outcome levels compared with all other states in 2013 and 2018

Outcome	2013 MD Mean	2013 MD Rank	2013 Nation Mean	2013 Nation 10th	2013 Nation 25th	2013 Nation 50th	2013 Nation 75th	2013 Nation 90th	2018 MD Mean	2018 MD Rank	2018 Nation Mean	2018 Nation 10th	2018 Nation 25th	2018 Nation 50th	2018 Nation 75th	2018 Nation 90th	2018 vs. 2013 MD Mean Diff. (%)	2018 vs. 2013 Nation Mean Diff. (%)
Spending per beneficiary per year																		
Total Parts A and Part B Medicare FFS spending	12,185	1st	9,916	8,901	9,333	9,689	10,486	11,237	13,037	1st	10,891	9,876	10,198	10,746	11,492	12,411	852 (7%)	975 (10%)
Hospital spending (inpatient and outpatient)	6,884	1st	5,192	4,541	4,806	5,166	5,531	5,727	7,111	2nd	5,816	5,194	5,378	5,774	6,196	6,550	227 (3%)	624 (12%)
Total non-hospital spending	5,301	11th	4,724	3,790	4,056	4,812	5,174	5,569	5,927	7th	5,075	4,091	4,521	5,011	5,579	6,261	626 (12%)	351 (7%)
Non-hospital spending by category:																		
Ambulatory surgical center spending (not Part B drug)	131	5th	86	53	64	84	106	129	168	9th	114	72	83	107	142	173	37 (28%)	28 (33%)
Imaging and tests	416	5th	262	180	213	244	298	390	499	4th	309	219	247	293	340	442	83 (20%)	47 (18%)
Total spending for SNF	900	14th	817	633	713	821	908	1039	808	20th	775	595	645	774	857	994	-92 (-10%)	-42 (-5%)
Total spending for HH (paid under Part A)	217	17th	188	115	149	194	223	250	212	15th	184	112	154	196	215	235	-5 (-2%)	-4 (-2%)
Total spending for PCP ambulatory care visits	271	13th	246	212	225	248	270	280	326	19th	312	280	290	314	332	345	55 (20%)	66 (27%)
Total spending for specialist ambulatory care visits	314	6th	221	145	170	215	248	313	337	4th	228	144	179	213	273	319	23 (7%)	7 (3%)
All other non-hospital spending	3,052	20th	2,902	2,300	2,535	2,889	3,262	3,506	3,577	10th	3,153	2,504	2,773	3,130	3,498	3,794	526 (17%)	251 (9%)
Standardized total Parts A and Part B Medicare FFS spending	9,834	17th	9,401	8,235	8,776	9,427	9,989	10,303	10,615	17th	10,255	9,218	9,728	10,212	10,756	11,270	781 (8%)	854 (9%)
Standardized total hospital spending (inpatient and outpatient)	4,595	20th	4,506	4,073	4,279	4,496	4,785	4,892	4,817	39th	5,117	4,617	4,840	5,162	5,398	5,584	222 (5%)	611 (14%)
Standardized total non-hospital spending	5,239	17th	4,895	3,944	4,322	5,043	5,343	5,739	5,798	11th	5,137	4,182	4,526	5,203	5,664	6,024	559 (11%)	242 (5%)
Utilization per 1,000 beneficiaries per year																		
Number of all-cause acute care hospital admissions	321	7th	293	252	272	295	313	330	265	34th	269	233	248	276	288	296	-56 (-17%)	-24 (-8%)
Number of outpatient ED visits and observation stays	462	39th	499	414	465	505	536	563	481	41st	520	454	491	522	550	587	19 (4%)	21 (4%)

Outcome	2013 MD Mean	2013 MD Rank	2013 Nation Mean	2013 Nation 10th	2013 Nation 25th	2013 Nation 50th	2013 Nation 75th	2013 Nation 90th	2018 MD Mean	2018 MD Rank	2018 Nation Mean	2018 Nation 10th	2018 Nation 25th	2018 Nation 50th	2018 Nation 75th	2018 Nation 90th	2018 vs. 2013 MD Mean Diff. (%)	2018 vs. 2013 Nation Mean Diff. (%)
Quality of care-related utilization per 1,000 beneficiaries per year (unless noted otherwise)																		
Number of potentially preventable admissions	57	14th	53	40	48	54	57	64	46	32nd	45	34	41	47	50	55	-11 (-20%)	-8 (-15%)
Number of non-emergent or primary care treatable outpatient ED visits and observation stays	192	36th	201	169	186	202	216	229	184	40th	198	170	186	199	208	224	-8 (-4%)	-3 (-2%)
Unplanned 30-day readmission rate (percent)	18.2	2nd	16.0	13.9	15.0	16.1	17.1	17.6	16.4	23rd	16.0	14.1	15.1	16.2	17.0	17.6	-1.8 (-10%)	0 (0%)
Timely follow-up after acute exacerbations of chronic conditions (percent)	66.7	37th	67.9	63.2	65.7	68.3	70.2	72.8	71.3	31st	71.6	67.7	69.6	72.0	74.0	74.9	4.6 (7%)	3.7 (5%)
Patient satisfaction with their primary care provider (mean)	90.1	32nd	90.2	89.2	89.8	90.3	90.9	91.2	90.0	35th	90.3	89.0	89.9	90.4	90.9	91.3	-0.1 (-0.1%)	0.1 (0.1%)
Population health prevalence measures																		
Diabetes prevalence, residents ages 45 to 74 (percent)	14.9	36th	14.7	11.9	13.0	14.7	16.4	18.0	16.6	30th	16.1	12.6	13.9	16.2	17.7	20.2	1.7 (11%)	1.4 (10%)
Obesity prevalence, residents ages 45 to 74 (percent)	33.0	28th	32.6	28.3	29.8	33.6	35.6	36.6	35.1	28th	34.9	29.6	31.9	35.2	38.1	39.8	2.1 (6%)	2.3 (7%)
Average BMI, residents ages 45 to 74 (kg/m^2)	28.5	26th	28.5	27.8	28.1	28.6	28.9	29.1	28.8	27th	28.8	28.0	28.3	28.8	29.3	29.5	0.3 (1%)	0.3 (1%)

Source: Mathematica's analyses of Medicare enrollment and claims data, CAHPS, and BRFSS survey data.

Notes: The means and percentiles for the "nation" in the table above are calculated from the adjusted state-level means across the 49 other states and the District of Columbia. "MD Rank" refers to Maryland's position in a ranked order of the 50 states and DC from highest to lowest average, e.g. 1st refers to the highest average.

BMI = body mass index; BRFSS = Behavioral Risk Factor Surveillance System; CAHPS = Consumer Assessment of Healthcare Providers and Systems; ED = emergency department; FFS = fee-for-service; HH = home health; MD = Maryland; PCP = primary care provider; SNF = skilled nursing facility.

Table A.2. Maryland's unadjusted outcome levels compared with all other states in 2013 and 2018

Outcome	2013 MD Mean	2013 MD Rank	2013 Nation Mean	2013 Nation 10th	2013 Nation 25th	2013 Nation 50th	2013 Nation 75th	2013 Nation 90th	2018 MD Mean	2018 MD Rank	2018 Nation Mean	2018 Nation 10th	2018 Nation 25th	2018 Nation 50th	2018 Nation 75th	2018 Nation 90th	2018 vs. 2013 MD Mean Diff. (%)	2018 vs. 2013 Nation Mean Diff. (%)
Spending per beneficiary per year																		
Total Parts A and Part B Medicare FFS spending	12,185	2nd	9,750	8,292	8,788	9,380	10,774	11,719	13,037	5th	10,815	9,226	9,817	10,561	11,528	12,834	852 (7%)	1,065 (11%)
Hospital spending (inpatient and outpatient)	6,884	2nd	5,125	4,459	4,659	5,118	5,388	5,918	7,111	2nd	5,793	4,976	5,235	5,824	6,154	6,655	227 (3%)	668 (13%)
Total non-hospital spending	5,301	11th	4,624	3,421	3,904	4,616	5,156	5,776	5,927	9th	5,022	3,893	4,174	5,079	5,609	6,459	626 (12%)	398 (9%)
Non-hospital spending by category:																		
Ambulatory surgical center spending (not Part B drug)	131	5th	84	52	62	80	105	126	168	9th	112	69	81	106	143	172	37 (28%)	28 (33%)
Imaging and tests	416	4th	257	168	203	233	298	382	499	4th	304	211	238	288	338	438	83 (20%)	47 (18%)
Total spending for SNF	900	15th	788	568	634	774	930	1,061	808	19th	760	552	615	724	874	1,010	-92 (-10%)	-28 (-4%)
Total spending for HH (paid under Part A)	217	17th	182	94	141	182	226	248	212	16th	181	95	142	187	221	240	-5 (-2%)	-1 (-1%)
Total spending for PCP ambulatory care visits	271	11th	243	205	220	247	261	284	326	15th	309	273	291	308	331	346	55 (20%)	66 (27%)
Total spending for specialist ambulatory care visits	314	6th	217	136	163	297	247	314	337	4th	225	136	174	215	274	324	23 (7%)	8 (4%)
All other non-hospital spending	3,052	22nd	2,853	2,111	2,357	2,839	3,244	3,481	3,577	13th	3,131	2,325	2,598	3,125	3,553	3,901	525 (17%)	278 (10%)
Standardized total Parts A and Part B Medicare FFS spending	9,834	19th	9,241	7,472	8,266	9,388	10,139	10,651	10,615	23rd	10,184	8,548	9,271	10,363	10,961	11,670	781 (8%)	943 (10%)
Standardized total hospital spending (inpatient and outpatient)	4,595	19th	4,451	3,847	4,154	4,432	4,850	5,036	4,817	36th	5,100	4,421	4,778	5,128	5,484	5,710	222 (5%)	649 (15%)
Standardized total non-hospital spending	5,239	19th	4,790	3,526	4,027	4,945	5,416	5,727	5,798	14th	5,083	3,891	4,217	5,202	5,804	6,250	559 (11%)	293 (6%)
Utilization per 1,000 beneficiaries per year																		
Number of all-cause acute care hospital admissions	321	13th	288	229	259	295	320	334	265	30th	268	214	236	280	301	310	-56 (-17%)	-20 (-7%)
Number of outpatient ED visits and observation stays	462	39th	512	419	464	507	558	626	481	38th	526	441	481	524	560	635	19 (4%)	14 (3%)

Outcome	2013 MD Mean	2013 MD Rank	2013 Nation Mean	2013 Nation 10th	2013 Nation 25th	2013 Nation 50th	2013 Nation 75th	2013 Nation 90th	2018 MD Mean	2018 MD Rank	2018 Nation Mean	2018 Nation 10th	2018 Nation 25th	2018 Nation 50th	2018 Nation 75th	2018 Nation 90th	2018 vs. 2013 MD Mean Diff. (%)	2018 vs. 2013 Nation Mean Diff. (%)
Quality of care-related utilization per 1,000 beneficiaries per year (unless noted otherwise)																		
Number of potentially preventable admissions	57	20th	52	35	44	53	60	67	46	26th	45	28	38	47	53	59	-11 (-20%)	-7 (-13%)
Number of non-emergent or primary care treatable outpatient ED visits and observation stays	192	34th	209	166	180	209	226	262	184	34th	201	164	178	196	219	243	-8 (-4%)	-8 (-4%)
Unplanned 30-day readmission rate (percent)	18.2	4th	15.8	13.1	14.2	16.0	17.1	17.8	16.4	24th	15.9	13.2	14.5	16.3	17.4	17.8	-1.8 (-10%)	0.1 (1%)
Timely follow-up after acute exacerbations of chronic conditions (percent)	66.7	34th	67.5	62.6	65.1	67.6	69.6	72.7	71.3	31st	71.4	67.3	69.5	72.0	73.7	74.6	4.6 (7%)	3.9 (6%)
Patient satisfaction with their primary care provider (mean)	90.1	29th	90.1	88.9	89.7	90.2	90.8	91.2	90.0	32nd	90.2	88.9	89.8	90.3	90.7	91.2	-0.1 (-0.1%)	0.1 (0.1%)
Population health prevalence measures																		
Diabetes prevalence, residents ages 45 to 74 (percent)	14.9	26th	14.9	11.8	13.1	14.9	16.5	18.3	16.6	23rd	16.3	12.8	14.2	16.3	17.9	20.4	1.7 (11%)	1.4 (9%)
Obesity prevalence, residents ages 45 to 74 (percent)	33.0	27th	32.6	28.4	29.6	33.6	35.4	36.4	35.1	26th	34.9	29.6	32.0	35.2	38.1	39.8	2.1 (6%)	2.3 (7%)
Average BMI, residents ages 45 to 74 (kg/m^2)	28.5	26th	28.5	27.8	28.1	28.6	28.9	29.0	28.8	27th	28.8	28.0	28.3	28.9	29.3	29.5	0.3 (1%)	0.3 (1%)

Source: Mathematica's analyses of Medicare enrollment and claims data, CAHPS, and BRFSS survey data.

Notes: The means and percentiles for the "nation" in the table above are calculated from the unadjusted state-level means across the 49 other states and the District of Columbia. "MD Rank" refers to Maryland's position in a ranked order of the 50 states and DC from highest to lowest average, e.g. 1st refers to the highest average.

BMI = body mass index; BRFSS = Behavioral Risk Factor Surveillance System; CAHPS = Consumer Assessment of Healthcare Providers and Systems; ED = emergency department; FFS = fee for service; HH = home health; MD = Maryland; PCP = primary care provider; SNF = skilled nursing facility.

A.3. Outcome variables

In this section, we describe how we constructed the outcomes measures reported in Chapter 2 and in this appendix. We organize these based on whether they are constructed from claims and reported at the beneficiary-year-level (Appendix A.3.1), constructed from inpatient claims and reported at the discharge-level (Appendix A.3.2), or constructed from survey data from CAHPS (Appendix A.3.3) or the BRFSS (Appendix A.3.4).

A.3.1. Claims-based measures constructed at the beneficiary year-level

To construct claims-based outcomes the beneficiary year-level, we relied on the Medicare FFS Research Identifiable Files (RIF) claims data from the Virtual Research Data Center (VRDC). These files provided data on all services funded by FFS Medicare. We used claims data with at least 90 days of runout at the time we pulled the data, the standard for research purposes. We used all claims to measure outcomes, regardless of geography. For example, we included all Medicare claims for a Maryland resident, regardless of whether they received the covered services from providers in Maryland or elsewhere. We supplemented these data, as described below, with data from the Medicare Geographic Variation Data Base (GVDB) to measure standardized spending.

a. Medicare spending measures

Our measures of Medicare spending include Medicare payments recorded in Parts A and B RIF claims data. For all spending measures, we started by assigning the amount Medicare paid for each service to a year based on the end date (or thru date) on the claim. The one exception was for post-acute care claims, for which the services provided can often span many months even if only paid in a single month. In those cases, we apportioned the spending or utilization recorded on the claim according to the number of post-acute care days falling in the respective years.

We then summed Part A and Part B payments for the months that a beneficiary was observable in FFS claims that year (that is, they were alive, enrolled in Medicare FFS Parts A and B, and they had Medicare as primary payer) and annualized the payments to account for the number of months the beneficiary was observable in FFS claims. These amounts exclude the amounts that third parties and beneficiaries paid for deductibles, coinsurance, and copayments. They also exclude Medicare payments for Part D prescription drugs as well as any Medicare payment amounts on home health interim "RAP (request for anticipated payment)" claims. We set negative Medicare payments to zero.

Total Part A and Part B Medicare fee-for-service spending (dollars per beneficiary per year)

This outcome measures Medicare spending, in dollars per beneficiary per year, for Part A and B covered services during the year among beneficiaries who were observable for at least one month during the year. It is the sum of Medicare payments across inpatient, outpatient, skilled nursing facility (SNF), home health, hospice, carrier (or Part B), and durable medical equipment claims. This variable excludes non-claims payments (that is, payments from CMS to providers that were made separately from claims).

Part A and Part B Medicare fee-for-service spending, by service category

We also measured Medicare FFS spending for Part A and B covered services during the year stratified by type service. Specifically, we constructed the following categories:

1. **Hospital spending** includes spending for Part A inpatient and Part B outpatient claims at short-stay acute care hospitals, critical access hospitals, children's hospitals, inpatient rehabilitation hospitals, long-term care hospitals, and psychiatric hospitals.
2. **Non-hospital spending** measures the sum of all Part A and B spending that was not classified as hospital spending according to the definition above. Specifically, non-hospital spending is the sum of the following measures:
    - **2.1. Medicare Part A post-acute care spending** measures the sum of Part A spending for SNF and home health services, defined as follows:
        - **2.1.1. SNF spending** measures all spending for service use recorded in the SNF claims file. It includes spending for SNF services provided in swing beds in short term acute care hospitals.
        - **2.1.2. Home health visit Medicare Part A spending** measures Medicare Part A spending for service use recorded in the home health agency claims file. Medicare Part B also covers home health care, but Part A provides coverage following a qualifying inpatient hospital stay. This measure aims to capture post-acute care home health spending, so we limited spending to home health care claims covered by Part A, including (a small number of) claims that a were covered by both Medicare Parts A and B.
    - **2.2.** Ambulatory care visit with primary care providers and specialist physicians spending is the sum of the two ambulatory care visit spending measures below.
        - **2.2.1. Ambulatory care visit with primary care provider spending** measures Medicare Part B professional (carrier claim) spending for ambulatory visits with primary care practitioners, nurse practitioners (NPs), physician assistants (PAs), and other advanced practice nurses (APNs). It also includes Part B outpatient spending for ambulatory visits at clinics (Federally Qualified Health Centers and Rural Health Clinics).
        - **2.2.2. Ambulatory care visit with specialist physicians spending** measures Medicare Part B professional (carrier claim) spending for ambulatory visits with specialist physicians.
    - **2.3. Non-hospital Part B drug spending** measures spending for drugs covered by Medicare Part B that is not classified above as hospital spending. Specifically, we identified Medicare spending for claims lines in the non-hospital outpatient claims, carrier claims, and durable medical equipment claims files where the procedure (Healthcare Common Procedural Coding System, or HCPCS) code was for a drug paid for under the average sales price payment system.
    - **2.4. Ambulatory surgical center facility spending** measures facility charges for services at ambulatory surgical centers. Ambulatory surgical center claims were identified by the claim type of service code ("F"). Spending on Part B drugs was excluded (since this spending was captured in the measure described above).

2.5. **Imaging and testing professional spending** measures spending for professional services associated with imaging and testing. Specifically, it includes spending for claim lines in the carrier claims file where the procedure code was classified as imaging or testing according to the Berenson Eggers Type of Service (BETOS) algorithm (we used the original BETOS on the claims file for 2013 BETOS version2 for 2018 (Urban Institute, 2020). Professional spending excludes any outpatient facility charges for imagining and testing conducted in settings for which outpatient facility claims are also submitted.

2.6. **Other non-hospital spending** measures the sum of all Part A and B spending is not captured by any of the measures described above. This measure includes Medicare Part A spending on non-hospital inpatient services and hospice; Part B spending on home health care, ambulatory care visits with behavioral health providers; and Part B spending for non-hospital outpatient, professional (carrier) services, and durable medical equipment not otherwise captured in the measures above (for example, not previously categorized as spending on Part B drugs).

Standardized Part A and Part B Medicare fee-for-service spending

We computed measures of standardized Part A and Part B Medicare FFS spending using the Medicare GVDB, produced by the CMS Office of Information Products and Data Analytics. The database includes claim-level standardized payment amounts for Part A claims (inpatient, SNF, hospice, and home health) and Part B institutional (outpatient) claims. The GVDB contains line-level standardized payments for Part B non-institutional (carrier and durable medical equipment) claims. We merged the standardized payment amounts onto the RIF files (at the claim-level for Part A claims and Part B institutional claims and at the line-level for Part B non-institutional claims). Then we calculated standardized payments using the methods described above with the standardized payment amounts from the GVDB in place of actual payment amounts. Standardized spending removes differences in spending across claims because of difference in the prices paid to different providers (for example, those from wage indices or Health Services Cost Review Commission rate setting), so it measures intensity of service use in aggregate.

b. Utilization and quality of care measures

Our measures of service use (utilization) include services recorded in Parts A and B RIF claims data. In general, these measures involved identifying a specific type of service in claims, counting the amount of services received across all the months that a beneficiary was observable in Medicare FFS claims during the year, and then annualizing the measure to account for the number of months the beneficiary was observable (using the method described above).

Number of all-cause acute care hospital admissions (number of admissions per beneficiary per year)

This measure is the annualized number of hospitalizations for short-stay acute hospitals, critical access hospitals, and children's hospital admissions reported in the RIF inpatient claims file for the beneficiary during the year. Multiple claims for acute admissions that involved transfers between hospitals are combined into a single record, as were multiple claims for the same beneficiary at the same facility with overlapping dates, so that these count as one admission. We excluded hospitalizations for psychiatric care, inpatient rehabilitation stays, and long-term hospital stays.

Number of outpatient emergency department visits and observation stays (number of visits per beneficiary per year)

This measure is the annualized number of outpatient emergency department visits and observation stays for the beneficiary during the year that do not lead to a hospitalization. Visits that do not lead to a hospitalization are identified in the outpatient department RIF hospital claims file using revenue center line items equal to 045X or 0981 (emergency room care), 0762 (treatment or observation room), or 0760 (treatment or observation room—general classification). We counted a visit as an observation stay if it was longer than eight hours and had a corresponding HCPCS code of G0378 (hospital observation services per hour). We then capped the number of either type of visit (observation stays and emergency department visits) to one per day.

Number of potentially preventable admissions (number of admissions per beneficiary per year)

This measure is the annualized number of hospitalizations for short-stay acute hospital, critical access hospital, and children's hospital admissions reported in the inpatient claims file for the beneficiary during the year in which the admission met the criteria for the Prevention Quality Indicators (PQI) overall composite measure (PQI #90). To construct this measure, we applied the Agency for Healthcare Research and Quality's Quality Indicators Software to all-cause acute care hospital admissions (see definition above) and then counted the number of hospital admissions for the beneficiary each year that were flagged by the software as being admissions for one of the following PQIs: diabetes short-term complications (PQI #01), diabetes long-term complications (PQI #03), chronic obstructive pulmonary disease or asthma in older adults (PQI #05), hypertension (PQI #07), heart failure (PQI #08), community-acquired pneumonia (PQI #11), urinary tract infection (PQI 12), uncontrolled diabetes (PQI #14), asthma in younger adults (PQI #15), or lower-extremity amputation among patients with diabetes (PQI #16).

Number of non-emergent or primary care treatable outpatient emergency department visits and observation stays (number of visits per beneficiary per year)

This measure is the annualized number of outpatient emergency department visits and observation stays that a beneficiary had in a year classified as non-emergent or primary care treatable by the algorithm published by New York University (Billings et al. 2000a,b). To construct this measure, we applied the patched version of the New York University software algorithm to outpatient emergency department visits and observation stays (Johnston et al. 2017). For each visit, the algorithm assigns a specific percentage of the visit into the categories of:

1. Non-emergent
2. Emergent/primary care treatable
3. Emergent, emergency department care needed, preventable/avoidable
4. Emergent, emergency department care needed, not preventable/avoidable[39]

[39] The algorithm first identifies visits that are for injuries or are related to mental health, drugs, or alcohol. Johnston et al. (2017) found that about 26 percent of all emergency department visits are for these conditions. Further, another 8 percent of emergency department visits cannot be classified because their diagnosis codes do not map to one of the four categories listed above. Therefore, nationally, the New York University algorithm does not assign one of the four categories above to roughly 34 percent (26 percent + 8 percent) of all emergency department visits.

For example, a given visit might be assigned 10 percent to category 1, 50 percent to category 2, 30 percent to category 3, and 10 percent to category 4. For each beneficiary, we calculated the sum of the percentages for categories 1 and 2 across all the emergency department visits and observation stays during the year.

A.3.2. All-cause unplanned 30-day readmissions and timely follow-up after acute exacerbations of chronic conditions measured at the discharge level

All-cause unplanned 30-day readmissions

We used Medicare FFS RIF inpatient claims and enrollment for this measure. The file has one observation for each inpatient discharge. Beneficiaries can be included in the file once, more than once, or not at all depending on how many discharges they had. Multiple claims for acute admissions that involved transfers between hospitals are combined into a single record, as were multiple claims for the same beneficiary at the same facility with overlapping dates, so that these count as one discharge.

The all-cause 30-day post-discharge unplanned readmission measure indicates whether the discharge (the index admission) was followed by an unplanned hospital admission within 30 days. An unplanned readmission is defined as any hospitalization that does not follow an established plan of care (examples of planned admissions include those for chemotherapy and planned admission for transplant surgery). The measure equals 1 if there was an unplanned readmission within 30 days of discharge to any hospital, regardless of whether the readmission occurred at the same hospital or a different hospital. The measure equals 0 if there was no unplanned readmission within 30 days.

Our definition of this measure is based on the Yale readmission measure developed by the Yale New Haven Health Services Corporation/Center for Outcomes Research & Evaluation (2018) used in the Hospital Readmission Reduction Program under Section 3025 of the Affordable Care Act (QualityNet n.d.). An admission that counts as a readmission because it fell within 30 days of an earlier index stay can also count as an index stay for a potential subsequent readmission as long as it meets the index admission inclusion criteria.

Timely follow-up after acute exacerbations of chronic conditions (yes/no for the event)

This measures whether follow-up was received within the timeframe recommended by clinical practice guidelines in a non-emergency outpatient setting following an ED visit or hospitalization for one of the following six chronic conditions: hypertension, asthma, heart failure, coronary artery disease, chronic obstructive pulmonary disease, or diabetes mellitus (Type I or Type II). The measure specifications were developed by IMPAQ Health (2018). HSCRC has included improvement on this measure as one of its quality goals in the upcoming Statewide Integrated Health Improvement Strategy.

To develop this measure, we first identified hospital admissions and outpatient emergency visits and observation stays that met the denominator criteria for one of the six chronic conditions. Unlike all the other inpatient discharge-level outcome measures defined above, this measure is not strictly at the inpatient discharge level; the denominator includes outpatient ED visits and observation stays as well as inpatient discharges. Nonetheless, we group the measure with other discharge-level outcome measures because we analyze the outcome with the same methods. We

then applied the measure's additional denominator inclusion criteria with just one minor modification (that is, we do not exclude index events in December because we have claims data for the subsequent year). We then flagged qualifying events with timely follow-up—an outpatient or carrier claim for the same patient after the index event for a non-emergency outpatient visit that constitutes appropriate follow-up (for example, a general office visit or telehealth). The follow-up visit must occur within the condition-specific time frame to be considered timely: within 7 days of the date of discharge for hypertension; within 14 days for asthma, heart failure, and coronary artery disease; and within 30 days for chronic obstructive pulmonary disease and diabetes.

A.3.3. Consumer Assessment of Healthcare Providers and Systems survey data: Rating of primary care provider

We used the FFS CAHPS and Medicare Advantage (MA) CAHPS RIFs from the VRDC to construct survey respondent-level files. The FFS and MA CAHPS files were linked to the Medicare beneficiary analytic files with the annual claims-based outcomes using each beneficiary's unique beneficiary ID (see Appendix A.1). We limited the CAHPS data to respondents who received a non-zero or non-missing survey weight. The file has one observation per respondent, grouped by year.

This CAHPS questionnaire does not directly ask respondents to rate their primary care physician. Instead, the survey asks respondents to rate their personal doctor and then asks in a separate question whether their personal doctor is a specialist. The rating question states: "Using any number from 0 to 10, where 0 is the worst personal doctor possible and 10 is the best personal doctor possible, what number would you use to rate your personal doctor in the last 6 months?" Therefore, this measure is based on the global rating of the respondent's personal doctor, restricted to those who answer that their personal doctor is not a specialist. If the global rating or the response to the personal doctor question is missing, the response will be set to missing. The response will also be set to missing if a respondent indicates that their personal doctor is a specialist.

A.3.4. Behavioral Risk Factor Surveillance System Survey data: Percentage with diabetes and percentage obese

We used nationwide respondent-level BRFSS data to construct estimates of diabetes prevalence, diabetes incidence, mean body mass index, and obesity prevalence among adults ages 45 to 74 in each state using 2011 to 2013 data for 2013 estimates and 2016 to 2018 data for 2018 estimates, given sample size limitations. This respondent-level file has information on the respondent's state of residence; self-reported age, height, weight; whether a doctor has ever told them that they have diabetes; and their body mass index, calculated based on their self-reported height and weight. We restricted to those ages 45 to 74 and created an indicator for having diabetes based on self-report. We also created an indicator to flag respondents with obesity based on having a body mass index greater than or equal to 30.

Appendix B.

The Hospital and Care Partner Pathway: Supplemental Methods and Results

This appendix describes the data sources and methods we used in Chapter 3 to describe how hospitals and their care partners implemented the MD TCOC Model in 2019 and 2020. We also provide additional details on participating hospitals and program design.

B.1. Hospitals in the model

In Chapter 3, we described the 52 hospitals participating in the model because they are in the MD TCOC state agreement. Table B.1 lists those hospitals.

Table B.1. List of hospitals included in the MD TCOC Model

Hospital name
Meritus Medical Center
University of Maryland (UM) Medical Center
UM – Prince George's Hospital Center
HCH – Holy Cross Hospital
Frederick Memorial Hospital
UM – Harford Memorial Hospital
Mercy Medical Center
JHHS – Johns Hopkins Hospital
UM – Shore Regional Health at Dorchester
St. Agnes Hospital
LifeBridge – Sinai Hospital
Bon Secours Hospital
MedStar Franklin Square Medical Center
Adventist – Washington Adventist Hospital
Garrett County Memorial Hospital
MedStar Montgomery Medical Center
Peninsula Regional Medical Center
JHHS – Suburban Hospital
Anne Arundel Medical Center
MedStar Union Memorial Hospital
Western Maryland Regional Medical Center
MedStar St. Mary's Hospital
JHHS – Johns Hopkins Bayview Medical Center
UM – Shore Regional Health at Chestertown
Union Hospital of Cecil County
LifeBridge – Carroll Hospital Center
MedStar Harbor Hospital
UM – Charles Regional Medical Center
UM – Shore Regional Health at Easton
UM – Midtown Campus
Calvert Health Medical Center
LifeBridge – Northwest Hospital Center
UM – Baltimore Washington Medical Center

Hospital name
Greater Baltimore Medical Center
McCready Memorial Hospital
JHHS – Howard County General Hospital
UM – Upper Chesapeake Medical Center
Doctors Community Hospital
UM – Laurel Regional Hospital
MedStar Good Samaritan Hospital
Adventist – Shady Grove Adventist Hospital
UM – Rehabilitation & Orthopaedic Institute
Fort Washington Medical Center
Atlantic General Hospital Corporation
MedStar Southern Maryland Hospital Center
UM – St. Joseph Medical Center
LifeBridge – Levindale Hebrew Geriatric Center and Hospital
HCH – Holy Cross Germantown Hospital
Adventist – Germantown Emergency Center
UM – Queen Anne's Freestanding Emergency Center
UM – Bowie Health Center
UM – Shock Trauma

B.2. Incentives hospitals face under the MD TCOC to transform care

B.2.1. Quality-based incentive programs

Chapter 3.3.2 describes the quality incentive programs for Maryland hospitals at a high level. Table B.2 provides more detail on the quality incentives, including the specific measures included in the performance calculations and whether the incentives reward hospital improvement in the measure, attainment of a high level of quality, or both.

Table B.2. Measures included in Maryland's quality-based incentive programs

Maryland quality program	Outcome measures	Incentivizes attainment	Incentivizes improvement
Readmission Reduction Incentive Program	Unplanned 30-day readmission rate	X	X
Maryland Hospital-Acquired Conditions Program	14 preventable complications developed during hospital stay	X	
Quality Based Reimbursement Program	Risk-adjusted in-hospital mortality (10% weight) Total Hip Arthroplasty/Total Knee Arthroplasty complication rate (5% weight) Patient experience as measured by 8 HCAHPs survey measures, ED wait times (50% weight) 5 infection measures (35% weight)	X	X
Potentially Avoidable Utilization Program	Unplanned 30-day readmissions Adult hospital admissions for conditions that could be potentially prevented Pediatric hospital admissions for conditions that could be potentially prevented		X

Source: HSCRC program documents.

Note: The specific measures incentivized under these programs have evolved over time. This table reflects measures included in the 2021 rate year (paid in July 2020). These measures are calculated for patients across all payers (unlike their federal counterparts, they are not specific to Medicare beneficiaries).

ED = emergency department; HCAHPS = Hospital Consumer Assessment of Healthcare Providers and Systems; HSCRC = Health Services Cost Review Commission.

B.2.2. Calculating changes in hospital prices

As we described in Chapter 3.3.1, we measured the size of the global budget incentive to reduce hospital volumes in 2019 based on the amount that hospitals increased their prices during the year compared with the prices that the Health Services Cost Review Commission (HSCRC) set for the hospital at the start of the year. To calculate the change in prices in a year, we used two sources of information from the HSCRC website. First, we used *Hospital Rate Orders and Unit Rates*, "FY 2019 Rates" (HSCRC 2019c). These rate data show, for each hospital ID and cost center code (category of service), the base price and expected volume that HSCRC set for the hospital at the start of the year. The sum of the base prices times their expected volumes equals the prospectively set budget for the hospital for the year. Second, we used the *Hospital Financial Data* "FY2019 Final Experience Report" (HSCRC 2019b). This data set reports the actual volume and revenue amounts for each cost center each month of the fiscal year for each hospital. Within each cost center, we calculated the average price that the hospital received per unit during the year by dividing revenue by volume.

Because the units are not the same across cost centers, we calculated price increases (or decreases) for each hospital in two steps. First, for each cost center, we calculated the percentage difference between prospectively set prices at the start of the year and the average price paid throughout the year (total revenues divided by total volumes). Second, we took the average of these percentages, weighting each cost center by its contribution to the hospital's total budget.

B.2.3. Comparing the size of the possible and actual incentives to hospitals

For each of the incentives listed in Table 3.1 (except global budgets), HSCRC calculates a hospital's performance on cost and quality measures and then determines how much—in percentage terms—to adjust a hospital's revenue based on the hospital's performance (HSCRC 2020d, 2020f, 2020g, 2020h, 2020i). For each incentive program, HSCRC selects a type of revenue to apply the percentage to, which will affect the absolute size of the incentive (in dollars). For example, for the Medicare Performance Adjustment, HSCRC adjusts total Medicare revenue by up to plus or minus 1 percent. Appendix Table B.3 shows the revenue to which HSCRC applies each quality adjustment and the maximum penalty and reward on that scale.

Table B.3. Minimum and maximum hospital incentives under the MD TCOC Model (original scale)

Specific incentive	Maximum penalty	Maximum reward	Hospital revenue that this percentage rate increase/decrease applies to
MPA	-1%	+1%	CY total Medicare revenue
RRIP	-2%	+1%	RY Inpatient revenue (all payer)
MHAC	-2%	+2%	RY Inpatient revenue (all payer)
QBR	-2%	+2%	RY Inpatient revenue (all payer)
PAU	NA	0%	RY Total revenue - inpatient and outpatient (all payer)

CY = calendar year; MHAC = Maryland Hospital Acquired Conditions; PAU = Potentially Avoidable Utilization; QBR = Quality-Based Reimbursement Program; RRIP = Readmissions Reduction Incentive Program; RY = rate year.

In Chapter 3.3, we expressed all incentives—both possible and realized—as a fraction of a hospital's total revenue (inpatient and outpatient and for all payers) to enable us to contrast the strength of different incentives. To do this, we used each hospital's nominal dollar adjustment to revenues found in the scaling workbooks for each program, respectively, and divided by the hospitals' total revenues from financial condition reports found on the HSCRC website (HSCRC 2021a).

To calculate the maximum possible reward and penalty for each incentive, we first calculated the dollar amount that each hospital would earn if it earned the maximum penalty or reward for that incentive. Then, we divided that amount by the hospital's total revenue to express, for each hospital, the maximum penalty or reward as a percentage of its total revenue. Finally, to arrive at the maximum and minimum penalty across all regulated hospitals in the state, we took the average across all hospitals of each hospital's max reward and penalty.

B.3. Implementation of the Care Redesign Program

We used several data sources to analyze hospitals' implementation of the Care Redesign Program (CRP).

B.3.1. The Hospital Care Improvement Program

To assess hospital participation and performance in the Hospital Care Improvement Program (HCIP), we compiled data from the January to June 2019 and July to December 2019 payment adjustment workbooks constructed by Applied Medical Software (AMS), HSCRC's contractor that calculates payments to physicians. These workbooks include information on care partner participation, total eligible discharges, calculated physician incentives, and final incentives paid to each care partner. The workbooks did not include information on care partners (including total eligible discharges or calculated physician incentives) for 14 of the 25 hospitals that did not intend to distribute savings to care partners. These hospitals—all from two large health systems—are therefore not included in our analysis of care partners and reach of the program among hospital participants.

To calculate reach of the HCIP program, we divided the total eligible discharges under HCIP across care partners by the total number of Medicare Part A hospital stays in 2019 among the 52 hospitals included in our sample. There were 53,664 discharges covered under HCIP out of 200,707 total Medicare discharges in 2019. Because we did not have data on hospital discharges attributed to the program for 14 hospitals that did not plan to pay care partners, we might be underestimating the reach of HCIP among all Maryland hospitals.

To identify the specialty and system affiliations of care partners, we matched the AMS data with (1) 2017 Medicare Data on Physician Practice and Specialty (MD-PPAS) data, merging on National Provider Identifier (NPI), and to (2) the Agency for Healthcare Research and Quality's Compendium of US Health Systems 2016 Group Practice Linkage File, merging on the NPI's Tax Identification Number included in MD-PPAS. We could not identify a small number of care partners (N = 37) in the MD-PPAS data. For these providers, we used the physician specialty identified in the AMS workbooks and left the health system affiliation as missing.

To describe the allowable interventions hospitals pursued under HCIP, we analyzed the CRP workbooks that describe interventions selected by hospitals from Quarter 1 to Quarter 3 of 2019. We used a summary document of the workbooks constructed by The Lewin Group to identify the most common interventions chosen by hospitals. We also reviewed select hospital CRP workbooks for additional detail on the implementation of each hospital's interventions.

We reviewed each hospital's 2019 HCIP Implementation Protocol to identify the hospitals that planned to pay incentives to care partners if they achieved sufficient cost savings during the year. For actual savings distributed to care partners, we summarized data from the AMS workbooks.

B.3.2. The Episode Care Improvement Program

To assess hospital participation and performance in the Episode Care Improvement Program (ECIP), we relied heavily on the Chesapeake Regional Information System for our Patients (CRISP) Reporting Services portal. Data in the CRISP Reporting Services portal includes each hospital's episode selections, the number of episodes initiated, and aggregate episode payments and savings. We also received clarification from HSCRC on hospital participants (for example, one hospital planned to participate but never implemented any interventions).

We calculated reach statistics and examined allowable interventions under ECIP using the same approach we used for HCIP. Specifically, we divided the total eligible discharges across episode categories by the total number of Medicare Part A hospital stays in 2019 among the 52 hospitals included in our sample. There were 5,355 discharges covered under ECIP out of 200,707 total Medicare discharges in 2019. To analyze allowable interventions, we used a summary document constructed by The Lewin Group based on the hospitals' CRP workbooks. We also reviewed select hospital CRP workbooks for additional detail on the implementation of each hospital's interventions.

To examine care partner participation in ECIP, we leveraged a list of certified care partners for the ECIP program for each quarter in 2019 and 2020. This list provided details on care partners for each hospital, including individual providers and facility providers.

Finally, to describe payments to hospitals and savings distributed to care partners, we used data from the CRISP Reporting Services portal in addition to summary documents provided by the HSCRC on whether, and to what extent, hospitals planned to distribute incentives to care partners for 2019 to 2021.

B.4. Planned participation in Care Transformation Initiatives

To describe planned participation in Care Transformation Initiatives in 2021, we used summary data provided by HSCRC on November 18, 2020. These data include the submitting organization (for example, a hospital, health system, or group of facilities) and the number of proposed initiatives in each of seven thematic areas. We restructured these data to the hospital level to identify the number of hospitals planning to form Care Transformation Initiatives in each thematic area. HSCRC indicated that these data were not yet finalized when providing them to us.

Appendix C.

The Primary Care and Care Transformation Organization Pathway: Supplemental Methods and Results

This appendix contains information on the data and methods we used in Chapter 4 to describe implementation of the Maryland Primary Care Program (MDPCP).

C.1. Participation and reach

C.1.1. Participating practices and their characteristics

To describe the practices participating in MDPCP, we obtained data from The Lewin Group, the contractor CMS hired to help implement the MD TCOC Model. The Lewin Group provided a roster of the practices participating in the model in which a practice is a single physical location. For each practice, the data set included the practice's Tax Identification Number (TIN); a list of practitioners working at the practice; a list of Medicare fee-for-service (FFS) beneficiaries attributed to that practice; the track the practice is in (one or two); and whether the practice partnered with a Care Transformation Organization (CTO) and, if so, which one.

For the analyses we reported in Chapter 4, we limited the sample of practices to those that participated for all of 2019 or 2020, depending on the analysis. For 2019 analyses, we excluded the five practices that withdrew in the middle of 2019, leaving a final sample of 375 practices. In 2020, 101 additional practices joined the model, four were terminated, and four withdrew, resulting in a final sample of 468 practices. In all, 21 CTOs participated throughout 2019, and none withdrew. We only report data related to CTOs' payment and implementation experiences for 2019.

To describe characteristics of the practices participating in the model, we used (1) the roster data from Lewin, (2) the applications that practices submitted to become part of the model, and (3) the Agency for Healthcare Research and Quality's (AHRQ's) Compendium of U.S. Health Systems. The compendium includes data on health systems throughout the country. We merged practice and CTO data to the compendium to identify whether participating practices and CTOs were part of a health system and, if so, which ones. Specifically, we merged practices' TINs to the 2016 AHRQ practice linkage file. Because the group practice file is from 2016, we compared the compendium data with the application data to identify discrepancies. We manually adjusted 30 practices' affiliations to heath systems based on web searches. In addition, we manually reviewed the list of CTOs and matched those that were affiliated with a system to the AHRQ Compendium identifier so we could identify relationships between practices, CTOs, and systems.

To calculate the share of primary care practices in Maryland that were in MDPCP in 2020 we (1) divided the total number of practices participating throughout 2020 (N = 468) by (2) a count of the number of unique primary care practices in the state with at least one practitioner (physician, nurse practitioner, or physician assistant) with a specialty of family medicine, internal medicine, geriatrics, or general practice (N = 1,943). We used data from OneKey to define the numerator. The OneKey data include a separate record for each physical location for a primary care practice in the country, which we then subset to practices in Maryland.

C.1.2. Program reach among primary care physicians in Maryland

We calculated the reach of MDPCP among primary care physicians as the share of all eligible primary care physicians in the state who participated in the program. For this calculation, we defined the numerator and denominator as follows:

- **Numerator.** We started with the list from The Lewin Group of all 2,073 practitioners in MDPCP at the end of 2020. We merged this list of practitioners to Medicare claims data. We dropped 240 providers because their claims indicated a zip code other than Maryland or because the provider did not have any ambulatory care claims in 2020. We also removed practitioners who were nurse practitioners, physician assistants, or specialists (N = 595). These groups of practitioners are only eligible for MDPCP if they work in primary care practices. We removed them from the numerator for comparability with the denominator. (We could not identify, for the denominator, the subset of all practitioners of these types who were working in primary care practices.) We also removed 19 practitioners with TINs associated with fewer than 125 Medicare beneficiaries in 2020. (This is a program eligibility criterion that we applied to numerator and denominator.) These restrictions left 1,219 primary care physicians in MDPCP.
- **Denominator.** To identify the number of eligible primary care physicians in the state, we first identified physicians with a primary specialty of primary care, determined by the CMS provider specialty code on the plurality of ambulatory care claims for the provider that year (N = 4,974).[40] We identified physicians' TINs using the most frequent TIN reported on their ambulatory care claims. We excluded physicians with a TIN associated with fewer than 125 unique Medicare beneficiaries based on claims in 2019 (N = 795). Finally, we excluded an additional 34 providers who were on the list of MDPCP participants but were found to be not eligible for MDPCP because of the limitations of our claims-based approach (for example, the provider switched specialties or their TIN within the year).

Dividing the 1,219 participating primary care physicians by the 4,145 eligible primary care physicians in the state gave us a reach of 29 percent in 2020.

To further analyze the reach among primary care physicians across different geographic regions, we defined six regions (Baltimore City, Capital Region, Central Maryland, Eastern Shore, Southern Maryland, and Western Maryland) based on the counties in those regions (Maryland Hospital Association n.d.). Using the same process described in the numerator and denominator calculations, we assigned providers to TINs based on the most frequent TIN reported on their ambulatory care claims for the denominator and used the list of providers in MDPCP in 2020 provided by The Lewin Group for the numerator. Then, we linked the zip code associated with that TIN to counties in Maryland. Finally, we mapped counties to the six geographic regions. We then stratified the primary care physician numerator and denominators by the geographic regions to capture the penetration of MDPCP by region.

C.1.3. Program reach among Medicare fee-for-service beneficiaries

We calculated the reach of MDPCP among Medicare FFS beneficiaries as the share of beneficiaries living in Maryland who were attributed to a participating practice in 2020. For this calculation, we defined the numerator and denominator as follows:

- **Numerator.** We began with the 349,358 beneficiaries The Lewin Group's roster indicated were attributed to participating practices. We merged each beneficiary to their Medicare

[40] The CMS provider specialty code is the same for all nurse practitioners, physician assistants, and other advanced practice providers on ambulatory care claims, so we restricted the denominator to physicians because we could not distinguish whether these providers were primary care or specialty care providers.

claims data for 2020. We removed beneficiaries not found in the Master Beneficiary Summary File or not found to have a residence in Maryland (N = 3,485). We removed another 433 beneficiaries who did not meet our definition to be included in the eventual impact evaluation (to be included in the upcoming impact evaluation, beneficiaries have to be alive for at least part of the year, be enrolled in both Medicare Parts A and B, and have Medicare as their primary payer). Finally, we removed another 75 beneficiaries who were not observable in claims data for at least six months.

- **Denominator.** To identify the number of Medicare FFS beneficiaries in Maryland, we identified beneficiaries in the 2019 in the Master Beneficiary Summary File (N = 62,032,593). We then removed beneficiaries who lived outside Maryland (N = 60,985,729), would not be included in our upcoming impact evaluation (N = 283,808), and were not observable for six or more months (N = 22,755).

Our final reach statistic for 2020 for beneficiaries was 345,365 divided by 740,301, or 47 percent.

C.2. Incentives and supports

We used two primary data sources to calculate payments CMS made to practices and CTOs in 2019: (1) financial data that practices reported to CMS and (2) CMS payments to practices and CTOs, provided by The Lewin Group. The financial reporting data included self-reported data on total practice revenue, which enabled us to calculate MDPCP payments as a share of total practice revenue. The payment data from The Lewin Group included payments to practices in 2019 from all three payment streams in the program: care management fees, performance-based incentive program payments, and (if applicable) Comprehensive Primary Care Plus payments.

To calculate the average percentage revenue increase related to MDPCP enhanced payments, we used the following method:

- First, we summed the enhanced payments (defined as care management fees and performance-based incentive payments) paid to practices and CTOs, which we derived from the payment data provided by the implementation contractor.
- Then, we took the practice-level enhanced payments and divided it by the practice-reported all-payer revenue that practices reported in the MDPCP Practice Portal. Out of the 375 practices that participated through the end of 2019, 371 reported their total practice revenue; therefore, our total sample size for this calculation was 371 practices.

C.2.1. Care management fees

CMS designed the care management fee to support practices as they transformed care to meet care delivery requirements. Both tracks received risk-adjusted care management fees; Track 2 practices received higher care management fees because of the more intensive care coordination requirements they must meet. Care management fees are adjusted based on beneficiary risk tiers assessed on the Hierarchical Condition Category and claims data for diagnoses. The five risk tiers are available in Table C.1.

Table C.1. Care management fee risk adjustment criteria and payment amounts

	Track 1		Track 2	
Risk tier	Criteria	PBPM payment	Criteria	PBPM payment
1	1 to 24 percent HCC	$6	1 to 24 percent HCC	$9
2	25 to 49 percent HCC	$8	25 to 49 percent HCC	$11
3	50 to 74 percent HCC	$16	50 to 74 percent HCC	$19
4	75 to 89 percent HCC	$30	75 to 89 percent HCC	$33
Complex	90+ percent HCC or persistent and severe mental illness, substance use disorder, or dementia	$50	90+ percent HCC or persistent and severe mental illness, substance use disorder, or dementia	$100

Source: Maryland Primary Care Program Request for Applications (Center for Medicare & Medicaid Innovation n.d.)

HCC = Hierarchical Condition Category; PBPM = per beneficiary per month.

C.2.2. Performance-based incentive payments

To reward practices for their performance in MDPCP, CMS provides participating practices with a prospectively paid risk-adjusted performance-based incentive payment based on beneficiaries' experience, clinical quality, and utilization measures that drive total cost of care (Table C.2). This is based on two categories of measures: quality and utilization. The specific measures for the quality component include electronic clinical quality measures and the Consumer Assessment of Healthcare Providers and Systems Clinician & Group Survey metrics. For the utilization component, the performance was based on Medicare claims-based measures of inpatient admissions and emergency department visits. Based on performance, practice's performance-based incentive payments could be partially or entirely recouped. CMS planned to score practice performance using a continuous approach with a minimum score of 50 percent (below which a practice keeps none of the performance-based incentive payment amount) and a maximum score of 80 percent (above which a practice keeps the entire amount). Because of the COVID-19 pandemic, however, CMS did not recoup any of these payments in 2020 based on 2019 performance.

Table C.2. Performance-based incentive payments amounts by track

Track	Utilization (PBPM)	Quality (PBPM)	Total (PBPM)
Track 1	$1.25	$1.25	$2.50
Track 2	$2.00	$2.00	$4.00

Source: Maryland Primary Care Program Request for Applications (Center for Medicare & Medicaid Innovation n.d.)
PBPM = per beneficiary per month.

C.2.3. Comprehensive Primary Care Payments for Track 2 Practices

To help provide increasingly flexible coordination of care, CMS pays Track 2 practices through a hybrid alternative to FFS: part upfront per beneficiary payments that are not tied to utilization (paid quarterly) and part reduced FFS (paid based on claims submission). Track 2 practices can elect the percentage of payment that is paid prospectively; the possible proportions that practices can elect increase over time (Table C.3).

Table C.3. Options that MDPCP Track 2 practices can select for the percentage of their evaluation and management revenue that comes from monthly payments versus fee for service, by year of practice participation

Year 1	Year 2	Year 3
10% monthly payments / 90% fee for service	Not an option	Not an option
25% / 75%	25% / 75%	Not an option
40% / 60%	40% / 60%	40% / 60%
65% / 35%	65% / 35%	65% / 35%

Source: Maryland Primary Care Program Request for Applications (Center for Medicare & Medicaid Innovation n.d.)
MDPCP = Maryland Primary Care Program.

C.3. Changes in care

To examine practices' approaches to delivering care, we used data that practices and CTOs self-reported to CMS via two sources: the MDPCP Practice Portal and applications to become part of MDPCP. In addition, we leveraged survey data collected by The Lewin Group, which CMS hired to help run learning activities for practices participating in MDPCP.

CMS requires active MDPCP practices to submit responses about care transformation requirements and related practice activities online through the MDPCP Practice Portal quarterly. CMS uses these data to track practices' progress on the care delivery functions and to inform learning activities; CMS might also use them to judge practice compliance with the model.

Lewin fielded a survey to participating practices on baseline capabilities in December 2018. We generally used these data, in addition to application data and data from Quarter 1 of the portal, to describe baseline approaches to care, and we used data from Quarter 3 or Quarter 4 from the portal data to describe approaches at the end of 2019.

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