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

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Contents

Exhibits

Acronyms

CAHPS®	Consumer Assessment of Healthcare Providers & Systems
CTI	Care Transformation Initiative
CTO	Care Transformation Organization
CMS	Centers for Medicare & Medicaid Services
CRISP	Chesapeake Regional Information System for our Patients
CHIP	Children's Health Insurance Program
CI	confidence interval
DPP	Diabetes Prevention Program
EHR	electronic health record
ED	emergency department
ESRD	end-stage renal disease
ECIP	Episode Care Improvement Program
EQIP	Episode Quality Improvement Program
FQHC	Federally Qualified Health Center
FFS	fee for service
HEART	Health Equity Advancement Resource and Transformation
HSCRC	Health Services Cost Review Commission
HCC	Hierarchical Condition Category
LTAC	long-term acute care
MDAPM	Maryland All-Payer Model
MDH	Maryland Department of Health
MDPCP	Maryland Primary Care Program
PUMA	Maryland Public Use Microdata Area
MD TCOC	Maryland Total Cost of Care Model
MAX	Medicaid Analytic eXtract
MPA	Medicare Performance Adjustment
PQI	Prevention Quality Indicator

PPS	prospective payment system
PHE	public health emergency
SVI	Social Vulnerability Index
SIHIS	Statewide Integrated Health Improvement Strategy
TAF	T-MSIS Analytic File
T-MSIS	Transformed Medicaid Statistical Information System

Glossary

Care Transformation Initiative (CTI). An optional program that allows Maryland hospitals to define episodes of care and receive incentive payments for reducing the total cost of care associated with those episodes.

Care Transformation Organization (CTO). An organization, often run by a health system, that provides support, such as care managers, to primary care practices participating in the Maryland Primary Care Program.

Chesapeake Regional Information System for our Patients (CRISP). A health information exchange in Maryland that supports hospitals and practices with real time access to data and performance metrics. It also provides administrative support for providers participating in certain model programs.

Episode Care Improvement Program (ECIP). An optional program that allows Maryland hospitals to receive incentive payments for reducing the total cost of care associated with those episodes and meeting quality targets. The Episode Care Improvement Program is similar to a Care Transformation Initiative but focuses on more efficient use of post-acute care and requires hospitals to select episodes from a list (rather than define their own).

Episode Quality Improvement Program (EQIP). An optional program for Maryland specialist physicians that pays incentive payments if specialists can reduce Medicare fee-for-service costs of the episodes they manage, such as hip replacement surgeries, while meeting quality goals.

Health Equity Advancement Resource and Transformation (HEART) payments. Additional payments made to practices in the Maryland Primary Care Program to support them in serving patients with complex health needs living in disadvantaged zip codes, as defined by the Area Deprivation Index.

Health Services Cost Review Commission (HSCRC). The independent Maryland state agency responsible for setting all-payer hospital rates for hospitals in the state.

Hospital net operating margins. Net operating revenue minus total operating expenses divided by net operating revenue. Both revenue and expenses are for regulated services. Regulated services include inpatient, hospital-based outpatient, and emergency services (but excludes physician services).

Prospective payment system. A payment system the Centers for Medicare & Medicaid Services uses to set national hospital rates under Medicare fee-for-service. As part of a long-standing waiver, hospitals in Maryland are exempt from the prospective payment system, and the state sets its own hospital rates in exchange for meeting cost and quality targets that have evolved over time.

Maryland All-Payer Model (MDAPM). An initiative from Maryland and the Centers for Medicare & Medicaid Services that introduced global budgets and held the state accountable for per-capita hospital spending and hospital quality targets. This model ran from 2014 to 2018.

Maryland Model. The Maryland Model began with the Maryland All-Payer Model period (2014 to 2018) and continues with the Maryland Total Cost of Care period (2019 to 2026). Although the Maryland All-Payer Model and Maryland Total Cost of Care Model are distinct models established by separate legal agreements, we conceptualize them as parts of an overarching and evolving Maryland Model for the purpose of estimating impacts. All references to "the model" in the report refer to the Maryland Model.

Maryland Primary Care Program (MDPCP). A voluntary primary care initiative in Maryland that began in 2019 and is modeled after national initiatives from the Centers for Medicare & Medicaid Services, such as Comprehensive Primary Care Plus and Primary Care First.

Maryland Total Cost of Care (MD TCOC) Model. An initiative from Maryland and the Centers for Medicare & Medicaid Services that continues hospital global budgets from the Maryland All-Payer Model and extends state accountability and corresponding incentives and supports beyond the hospital. The state is now accountable for generating $2 billion in savings in total per-capita Medicare spending over eight years (2019 to 2026).

Medicare Performance Adjustment (MPA). A tool used by Maryland to adjust individual hospitals' budgets based on total per-capita Medicare spending of beneficiaries attributed to them.

Outcomes-based credit. A credit the state earns toward its savings requirements under the Maryland Total Cost of Care Model for addressing health conditions that affect Marylanders in large numbers. As of 2023, the Centers for Medicare & Medicaid Services has approved one outcomes-based credit—for reducing statewide diabetes incidence.

Potentially preventable admissions. Admissions for diabetes complications, chronic obstructive pulmonary disease or asthma in older adults, hypertension, heart failure, community-acquired pneumonia, urinary tract infection, uncontrolled diabetes, asthma in younger adults, or lower-extremity amputation among patients with diabetes.

Quality-adjusted all-payer global budgets. The amount, set by the Health Services Cost Review Commission at the start of each state fiscal year, that a hospital can receive for the upcoming year across all payers. Hospitals continue to bill payers for individual services, but they adjust their prices throughout the year so that total revenue (price times volume) matches the budget by the end of the year. Global budgets include inpatient and outpatient services but exclude services from physicians or other providers. The Health Services Cost Review Commission also adjusts budgets based on a hospital's performance on quality measures.

Rate year (RY). The Health Services Cost Review Commission updates hospital global budgets and evaluates performance on various model components following rate years, which run from July 1 to June 30 of each year. For example, rate year 2022 ran from July 1, 2021 to June 30, 2022.

Regional Partnership Catalyst Grants. Competitive grants to hospitals and their community partners to improve diabetes prevention and management and expand behavioral health crisis programs.

Retained revenue. The difference between a hospital's actual revenue under the global budget system and the lower revenue the hospital would have earned under a fee-for-service schedule due to reductions in the volume of services. HSCRC calculates the revenue a hospital would have earned under a fee-for-service system by multiplying the hospital's actual volume of services for the year by the all-payer rates that HSCRC sets for each hospital at the start of the year.

Statewide Integrated Health Improvement Strategy (SIHIS). A collaborative agreement between Maryland and the Centers for Medicare & Medicaid Services (approved by the agency in 2021) that sets specific quality goals for the Maryland Total Cost of Care Model. The quality goals fall into three domains: hospital quality, care transformation across the system, and total population health.

Standardized hospital spending. A measure of Medicare hospital spending that reprices claims to a standardized national fee schedule. Standardized spending removes the influence of HSCRC's rate setting on hospital prices and is therefore a useful measure of intensity of hospital services (inpatient and outpatient) defined equally in Maryland and the nation.

Social Vulnerability Index (SVI). A vulnerability index created by the Centers for Disease Control and Prevention that refers to the potential negative effects on communities caused by external stresses on human health. Such stresses include natural or human-caused disasters, or disease outbreaks. The index includes measures in four themes: socioeconomic status, household characteristics, racial and ethnic minority status, and housing type and transportation.

Executive Summary

In 2019, the Centers for Medicare & Medicaid Services (CMS) and Maryland launched the Maryland Total Cost of Care (MD TCOC) Model, marking one of the first times CMS has held a state accountable for the total Medicare spending for its resident Medicare fee-for-service (FFS) beneficiaries. The state has committed to generating $2 billion in Medicare savings (relative to national trends) over eight years (2019 to 2026). 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. Maryland has also committed to improving hospital quality, transforming care across the health system, and improving population health.

Common acronyms

HSCRC: Health Services Cost Review Commission

MDAPM: Maryland All-Payer Model

MDPCP: Maryland Primary Care Program

MD TCOC: Maryland Total Cost of Care

The MD TCOC Model builds directly from the 2014–2018 Maryland All-Payer Model (MDAPM), which focused on hospital costs and quality. In that model, Maryland, through the independent Health Services Cost Review Commission (HSCRC), introduced all-payer global budgets for almost all hospitals in the state. The MD TCOC Model continues the all-payer global budgets and introduces new incentives and investments to engage a wider range of providers in care transformation throughout the state.

A. MD TCOC Model goals and components

The goals of the MD TCOC Model are to reduce Medicare FFS spending while improving quality of care and population health (see Box ES.A). The MD TCOC Model has several components designed to achieve these goals. We have ordered these components by the size of the incentives or investments across the state in 2022 to help identify which ones might be the largest drivers of care changes (Exhibit ES.1).

Box ES.A. Cost and quality goals in the MD TCOC Model

- Reduce total per-capita Medicare FFS spending[a]
- Reduce preventable hospital admissions
- Reduce hospital readmissions by reducing within-hospital disparities
- Improve timely follow-up after acute exacerbations of chronic conditions
- Improve population health by reducing mean body mass index, diabetes incidence, overdose deaths, severe maternal morbidity, and children's asthma-related emergency department visits

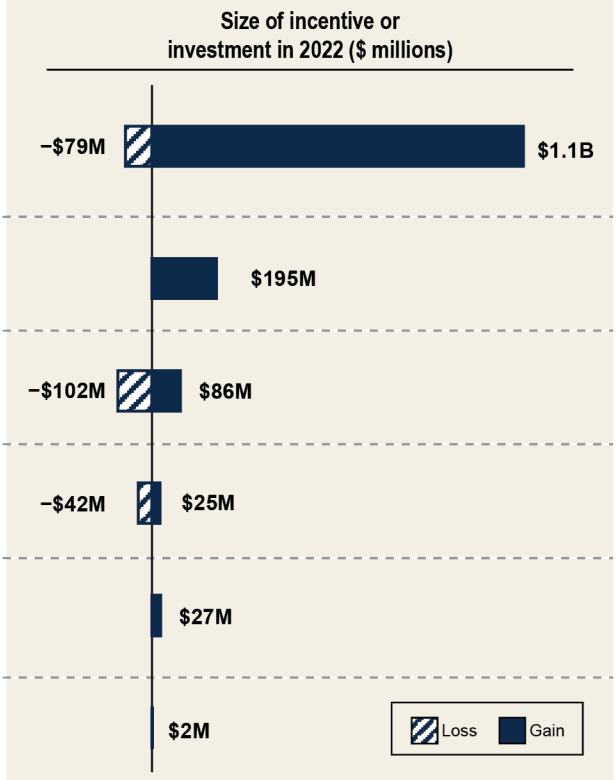
[a] When CMS and Maryland designed the MD TCOC Model, per capita Medicare spending was higher in Maryland than in peer states. CMS set savings goals so that per capita spending would, by the end of the MD TCOC Model, match the average among peer states.

Note: The goal to reduce Medicare FFS spending was set in the 2018 MD TCOC Model state agreement. The other goals were set in the Statewide Integrated Health Improvement Strategy (approved by CMS in 2021) and in the Outcomes-Based Credit Methodology (approved by CMS in 2019).

Component: All-payer hospital global budgets. The largest incentives in the MD TCOC Model are the all-payer hospital global budgets. At the start of each year, HSCRC sets a budget across all payers for each hospital in the state. These budgets, which continue from MDAPM, encourage hospitals to reduce avoidable hospital use by improving beneficiaries' health or shifting care to lower-acuity settings. When hospitals reduce volume, their variable operating costs decrease but their revenues remain fixed, generating net income. One way to quantify the size of the incentive to reduce volume is HSCRC's calculation of "retained revenue." Retained revenue is the difference between a hospital's revenues based on its global budget and the lower revenues it would have earned due to volume reductions under an FFS schedule. In 2022, 41 hospitals reduced volumes compared to those built into their global budgets, generating retained revenue that totaled $1.1 billion.[1] In contrast, 11 hospitals exceeded volumes built into their global budgets and had -$79 million in retained revenue in 2022.

Exhibit ES.1. All-payer hospital global budgets, the Maryland Primary Care Program, and quality adjustments to hospital budgets were the largest potential drivers of change in the MD TCOC Model in 2022, as measured by the statewide size of the incentive or investment

MD TCOC Model component	Measure of incentive size or investment
1. All-payer hospital budgets	Retained revenue: The difference between a hospital's revenues based on its global budget and the lower revenues it would have earned due to volume reductions under an FFS schedule[a]
2. Maryland Primary Care Program	Payments to participating practices and their supporting Care Transformation Organizations
3. Quality adjustments to hospital global budgets	Adjustments to hospital budgets based on each hospital's performance on quality measures
4. Medicare Performance Adjustment	Adjustments to hospital budgets based on each hospital's performance on total cost of care for Medicare FFS beneficiaries
5. Regional Partnership Catalyst Grants	Competitive grant funding for hospitals for diabetes prevention and management services and for behavioral health crisis services
6. Episode Care Improvement Program	Amount hospitals received for reducing Medicare episode costs while meeting quality targets



[a] Hospitals that exceeded volumes built into their global budgets had negative retained revenue.

B = billion; FFS = fee-for-service; M = million.

[1] When setting hospital budgets, HSCRC assumes that hospital volumes will be what they were in 2013, adjusted for population growth and shifts in care across hospitals. Therefore, hospital efforts that reduce volume below the adjusted 2013 levels will generate positive retained revenue. See Appendix A for details.

Component: Maryland Primary Care Program. The second largest component is the Maryland Primary Care Program (MDPCP), which generates additional payments to improve primary care in select domains, such as comprehensiveness and coordination. In 2022, CMS paid the 508 participating practices and Care Transformation Organizations that supported them almost $200 million. MDPCP reached around half of all Medicare FFS beneficiaries in the state. Practices that meet eligibility requirements and opt to join MDPCP are not subject to downside risk.[2] Care Transformation Organizations, often run by health systems, are entities that provide partnering practices with care managers and other supports to help practices meet care delivery requirements.

Component: Quality adjustments to hospital global budgets. Hospitals also face adjustments to their global budget revenue for performance on key quality metrics, such as hospital readmission rates, patients' experience ratings, and rates of potentially preventable complications during a hospital stay. Hospitals can either earn or lose revenue in these quality programs. In total, there was a total of $86 million in earnings and $102 million in losses from these adjustments in 2022.

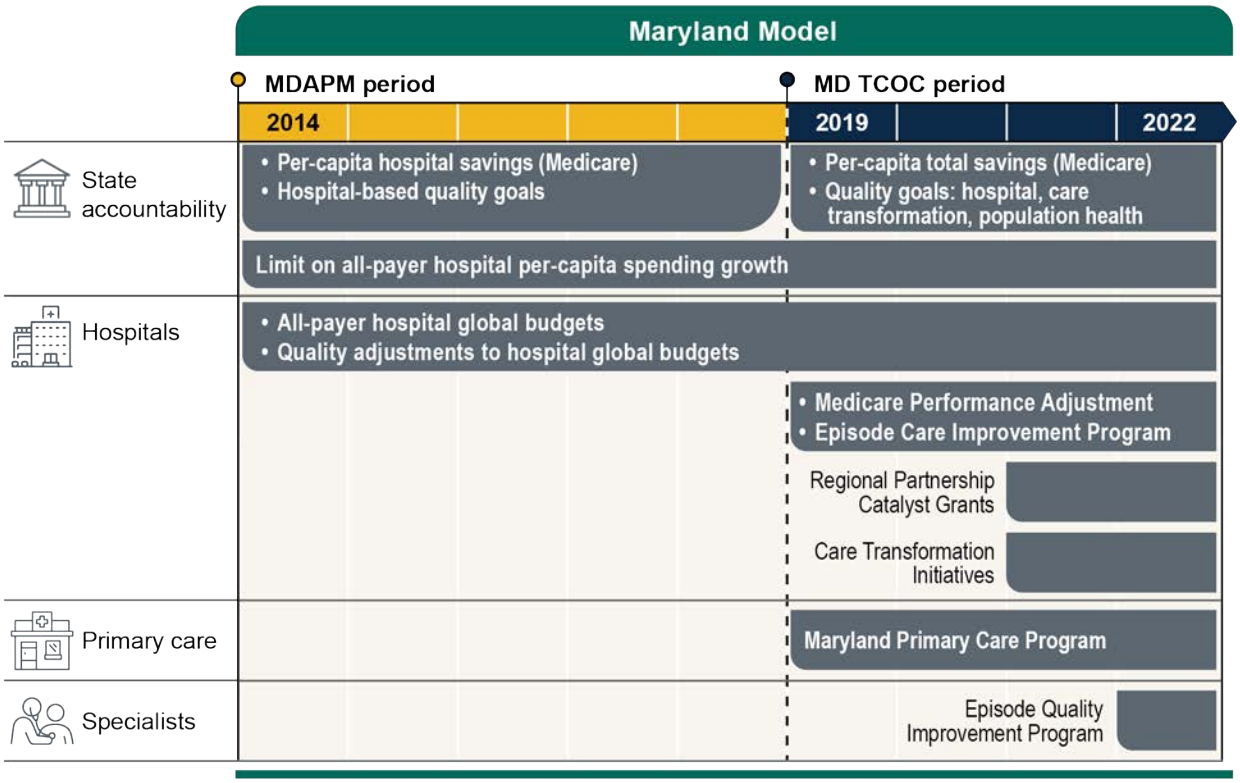
Other components. The MD TCOC Model includes several other components with smaller incentives, investments, and supports, including (1) the Medicare Performance Adjustment, which places some accountability on hospitals for the total cost of care via adjustments to their budgets that are based on the cost of care for attributed Medicare beneficiaries; (2) Regional Partnership Catalyst Grants to hospitals and their partners for services to prevent or manage diabetes (including increasing the provision of Medicare Diabetes Prevention Program services) and behavioral health crises; and (3) the Episode Care Improvement Program, designed to improve quality and efficiency of episodes of care beginning after a hospital discharge. The model also includes other episode-based programs for hospitals (Care Transformation Initiatives) and specialists (the Episode Quality Improvement Program). Payments for these last two programs, however, were not incorporated into global budgets until 2023, after this report's study period.

[2] MDPCP began a third track for practices in 2023 which introduced upside and downside risk. Track 3 began after the period in this report (2019 to 2022).

B. Statewide effects for Medicare FFS beneficiaries

Although MDAPM and MD TCOC are distinct models established by separate legal agreements, we consider them parts of a single overarching Maryland Model when estimating model effects (Exhibit ES.2). Throughout the report, when we use the term "the model" we are referring to the Maryland Model. We estimate model effects each year from 2014 to 2022 as the difference between the outcomes that occurred in Maryland and what we estimate would have occurred if Maryland and CMS had not introduced any of the changes they did since 2014 (that is, the counterfactual). We use an out-of-state comparison group comprising about a quarter of the nation to estimate the counterfactual outcome trends. We estimate effects during the MD TCOC period (2019 to 2022) and compare them with the effects during the last two years of the MDAPM period (2017 to 2018) to look at the relative progress of the model over time. We estimated effects for the almost 800,000 Medicare FFS beneficiaries living in Maryland.

Exhibit ES.2. The Maryland Model has evolved over time, with growing state accountability for health care costs and quality



During the first four years of the MD TCOC period (2019 to 2022), the model reduced Medicare Part A and B spending by 2.1%, reduced hospital admissions by 16.2%, and improved several quality measures (Exhibit ES.3). For many outcomes, impacts were larger during the MD TCOC period than they were at end of the MDAPM period (2017 to 2018), signaling additional improvement.

Exhibit ES.3. The model reduced Medicare spending and service use during the MD TCOC period (2019 to 2022), with effects that were generally larger than those at the end of the MDAPM period

Outcome	Favorable direction of effect[b]	Average annual percentage impact of the Maryland Model[a]: During the last two years of the MDAPM period (2017 to 2018)	Average annual percentage impact of the Maryland Model[a]: During the MD TCOC period (2019 to 2022)	Difference[c]
Medicare FFS spending				
Total Medicare FFS spending (Part A and B)	↓	-1.1%*	-2.1%**	-1.0pp**
Total Medicare FFS spending + non-claims payments[c]	↓	-1.3%**	-2.2%**	-0.9pp**
Hospital spending (inpatient and outpatient)	↓	-4.7%**	-6.1%**	-1.4pp**
Non-hospital spending	↓ or ↑[e]	3.6%**	3.1%**	-0.5pp
Service use and quality of care				
All-cause acute care hospital admissions	↓	-10.6%**	-16.2%**	-5.6pp**
Outpatient ED visits and observation stays	↓	-2.8%**	-5.9%**	-3.1pp**
Intensity of hospital care (measured by standardized hospital spending)[d]	↓	-4.6%**	-8.0%**	-3.4pp**
Potentially preventable admissions	↓	-9.9%**	-16.8%**	-6.9pp**
30-day post-discharge unplanned readmission	↓	-7.9%**	-8.9%**	-1.0pp*
Timely follow-up after acute exacerbation of chronic conditions	↑	2.2%**	2.6%**	0.4pp
Patient experience				
Patients' rating of their personal doctor	↑	0.10%	0.30%	0.2pp
Patients' rating of their hospital[e]	↑	1.50%	0.70%	-0.8pp
Medicare Diabetes Prevention Program				
Use of Diabetes Prevention Program services[f]	↑	Not shown[g]	Not shown[g]	Not shown[g]

* $p < 0.10$; ** $p < 0.05$

[a] We calculate the percentage impact as the impact estimate divided by the unadjusted Maryland mean minus the impact estimate.

[b] The arrows show the direction for model effects that would be consistent with the model's goals, incentives, and supports.

[c] We calculate the difference as the percentage impact in 2019–2021 minus the percentage impact in 2017–2018.

[d] Total spending with non-claims payments, standardized spending, and patients' rating of their hospital were only available at the time of this report through 2021. These estimates exclude the model impact in 2022. Effect estimates during the MD TCOC period are larger with the non-claims payments (-2.2%) than they are without them (-2.1%) because of the different time periods. The impact estimate without non-claims payments is much smaller in 2022 (-0.2%) than earlier years (2019 to 2021), which pulls the average closer to zero.

[e] The model could have favorable effects on non-hospital spending if it reduced non-hospital spending or increased it by less than the decreases in hospital spending, leading to total Medicare savings.

[f] We assessed impacts on Diabetes Prevention Program services because the Regional Partnership Catalyst Grants are funding the expansion of these services to help reduce mean body mass index and diabetes incidence in the state.

[g] The impact estimate as a percentage of the mean for the Diabetes Prevention Program was misleading because the use of (or billing for) Diabetes Prevention Program services in Maryland was very low. See Section 2.6 for detailed impact estimates.

ED = emergency department; FFS = fee for service; pp = percentage point.

Medicare spending

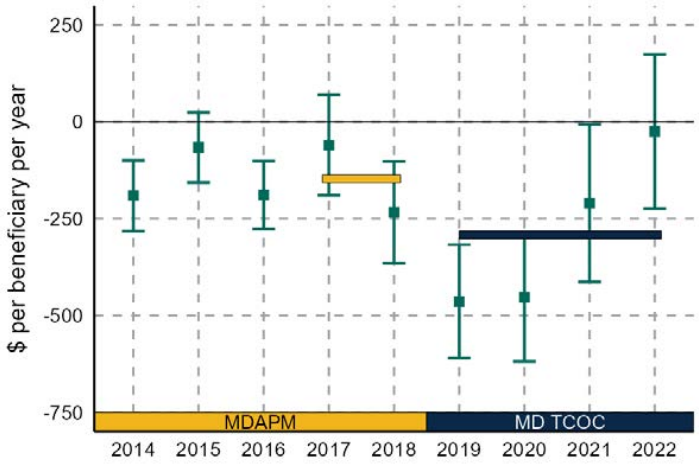
The model generated an estimated $689 million in net savings to Medicare over its first three years (2019 to 2021). There was notable variation in impacts by year.

Over the first four years of the MD TCOC period (2019 to 2022), the model decreased total Medicare Part A and B spending by an average of $292 per beneficiary per year or 2.1% (90% confidence interval: [$451, $133]) (Exhibit ES.3). These effects were about 1.0 percentage point larger during the MD TCOC period than they were at the end of the MDAPM period (2017 to 2018). The model reduced total spending by reducing hospital spending (6.1%) by more than it increased non-hospital spending (3.1%). After accounting for non-claims payments for MDPCP and other delivery reforms in Maryland and the comparison group, the model generated an estimated $689 million in net savings to Medicare over its first three years (2019 to 2021).[3]

The model reduced total spending largely because, for many years (from 2014 to 2019), HSCRC set the growth of total hospital spending in the state below the growth of hospital spending nationally. HSCRC did this mainly to meet savings requirements built into the agreements with CMS establishing the model. The hospital global budgets have encouraged hospitals to shift some care to non-hospital settings, such as sending some surgeries to ambulatory surgical centers, which have increased spending in non-hospital settings. The savings on hospital spending, however, have exceeded the increases in non-hospital spending, generating the overall Medicare savings.

The model generated less savings in the last two years of the model than it did in 2019 and 2020, with savings not statistically different from zero in 2022 (Exhibit ES.4). The decline in savings stemmed from the following two factors:

Exhibit ES.4. On average, the model reduced total Medicare Part A and B spending during the MD TCOC period, but it had less favorable effects in 2021 and 2022 than in 2019 and 2020



Notes: (1) Green squares represent the impact estimates each year from 2014 to 2022, with error bars representing the 90% confidence intervals. Estimates in which the intervals do not span zero are statistically different from zero at a $p < 0.10$ threshold. (2) Horizonal yellow and blue bars represent the average yearly impact during the last two years of MDAPM and the full MD TCOC period, respectively.

[3] Because we did not have non-claims payments in 2022 at the time of writing, the estimate of total savings covers three years (2019 to 2021).

First, the model continued to increase non-hospital spending (by $313 per beneficiary per year in 2022 compared with $125 in 2019) as hospitals continued to shift care to non-hospital settings. The model increased non-hospital spending in many categories, especially Part B drugs (which includes chemotherapy delivered in community clinics) and surgeries in ambulatory surgical centers.

Second, the model did not generate sufficient hospital savings after 2019 to offset these further increases in non-hospital spending. This occurred partly because the model effectively prioritized stability of hospital funding during and after the COVID-19 pandemic over generating larger hospital savings. HSCRC allowed hospitals to receive their full 2020 global budgets[4] even though hospital volumes declined substantially during the early phase of the COVID-19 pandemic. Further, the state did not need to increase savings in 2019 to 2022 because, from earlier constraints on hospital spending growth, the state could meet savings targets and still let total Medicare spending grow at the national rate. Therefore, when setting hospital global budgets, HSCRC aimed to ensure that the state would meet, but not necessarily beat, national spending growth (HSCRC 2021a). In 2022, HSCRC relied on CMS's actuarial projections of national spending growth when deciding how much to let hospital spending grow. The CMS actuarial projections ended up being higher than what occurred, largely because the rebound in spending after the COVID-19 pandemic was smaller than expected. As a result, Medicare hospital spending in Maryland grew faster than in the nation and in our comparison group in 2022, decreasing the estimated hospital savings that year.

Furthermore, the savings estimates for 2021 are less favorable when we account for non-claims payments in Maryland and the comparison group (moving from -1.5% to -0.5% and becoming not statistically different from zero). Non-claims payments were larger in Maryland than the comparison group primarily because of payments made under MDPCP, which has a much larger reach (52%) than comparable programs such as Comprehensive Primary Care Plus in our comparison group (less than 10%). Although we do not yet have non-claims payments for 2022, we anticipate that including these payments will similarly decrease savings in 2022 because MDPCP payments in 2022 were similar to what they were in 2021.

Hospital service use and related quality measures

From 2019 to 2022, on average, the model substantially improved service use and quality measures, including reducing all-cause admissions by 16.2%, reducing emergency department (ED) visits and observation stays by 5.9%, and reducing 30-day unplanned readmissions by 8.9% (Exhibit ES.3). Nearly all the improvements in service use and quality measures were larger during the MD TCOC period than they were at

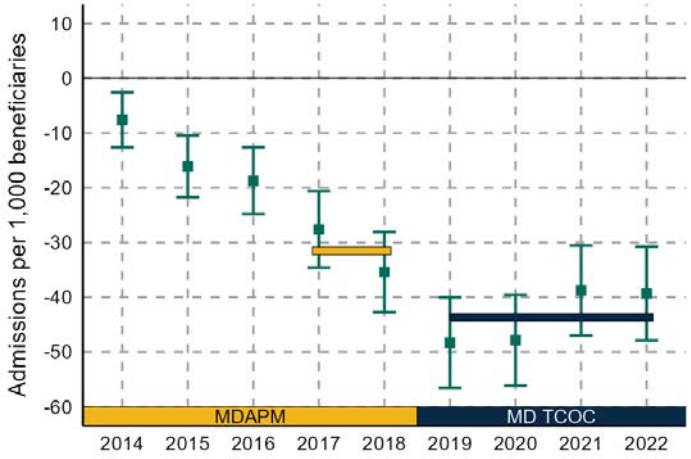
The model substantially improved all six of the service use and related quality measures examined.

[4] Some hospitals did not receive their full budget in 2020. However, these hospitals received higher revenues in 2021 (and 2022, if needed) to make up for shortfalls in 2020, after accounting for federal Provider Relief funds the hospitals received.

the end of the MDAPM period. The combination of substantial baseline room for improvement and incentives in quality-adjusted global budgets likely drove many of these effects. In 2013, the year before the model began, the per-capita risk-adjusted hospitalization rate for Medicare FFS beneficiaries in Maryland was the 7th highest across all states, and the readmission rate was the 2nd highest (Machta et al. 2021). The global budgets encouraged hospitals to reduce avoidable hospital care because doing so generates net income (as operating costs decline within fixed budgets). Further, many of the quality adjustments complement this global budget incentive because they also reward reductions in specific types of hospital care (for example, unplanned readmissions). Surveys and interviews of hospital leaders confirmed that the quality-adjusted global budgets substantially influenced their investment in care delivery changes. For example, many hospitals enhanced their discharge planning to reduce risk of readmission or provided care management services to those using the ED frequently to connect them with primary care or urgent care centers.

Similar to spending, however, effects on most service use and quality measures have leveled off since 2019. As an example, the model reduced hospital admissions by 48 per 1,000 in 2019 but only reduced them by 39 per 1,000 by 2022 (Exhibit ES.5), stopping the trend of increasing effects from 2014 to 2019. The leveling off of service use and quality effects might be attributable to three factors. First, the state had less room for improvement in 2020, because of the model's earlier gains and the COVID-19 pandemic-related curtailments in hospital use. Second, the COVID-19 pandemic disrupted some hospital interventions designed to reduce preventable acute care and improve quality. Finally, the COVID-19 pandemic accelerated national trends to move some care out of the hospital, making Maryland's efforts to do so less unique.

Exhibit ES.5. The model substantially reduced hospital admissions during the MD TCOC period, but effects have leveled off since 2019



Notes: (1) Green squares represent the impact estimates each year from 2014 to 2022, with error bars representing the 90% confidence intervals. Estimates in which the intervals do not span zero are statistically different from zero at a $p < 0.10$ threshold. (2) Horizonal yellow and blue bars represent the average yearly impact during the last two years of MDAPM and the full MD TCOC period, respectively.

Patients' experience with their personal doctors and hospital care

The model did not have measurable effects on patients' experience, as measured by patients' rating of their personal doctor (as measured by the FFS and Medicare Advantage Consumer Assessment of Healthcare Providers and Systems, or CAHPS®, surveys.) Similarly, the model did not measurably affect patients' ratings of their hospitals (as measured by hospital CAHPS surveys). Patients tended to rate their personal doctors (and, though to a lesser extent, their hospitals) highly in both Maryland and the comparison group. As a result, there may have been relatively little room for the model to improve these ratings. Further, the incentives in both MDPCP and the hospital quality programs to improve patients' experience are somewhat modest, particularly because they are one of many measures incentivized in these programs. Although the model did not improve patients' experience, the fact that it has not measurably reduced patients' hospital ratings also suggests that efforts to reduce preventable hospital use have not come at the expense of lower patient ratings.

The model did not measurably affect patients' ratings of their personal doctors or their hospital.

Diabetes Prevention Program services

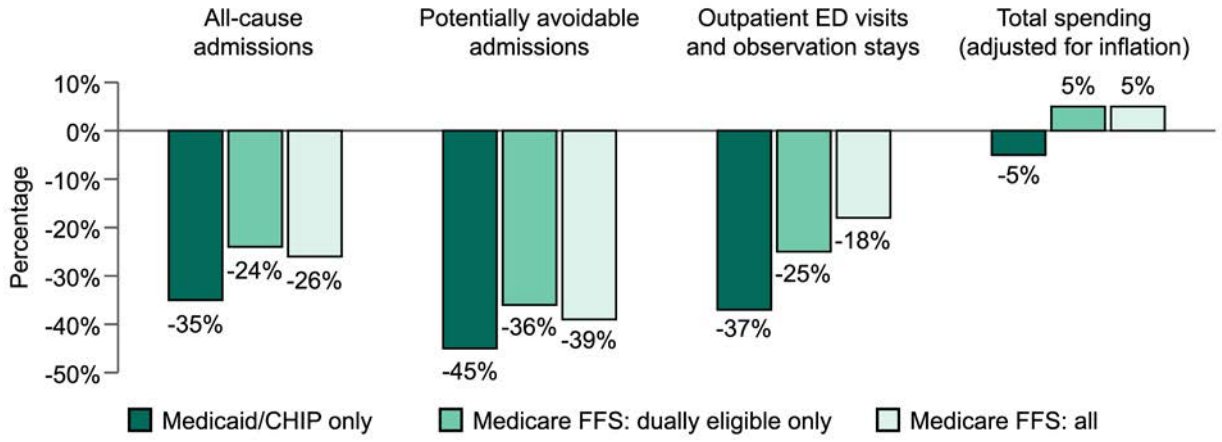
The model also did not affect rates of Diabetes Prevention Program service use, despite grants to hospitals and partners targeting these services. Overall rates of Medicare billing for Diabetes Prevention Program services are very low in Maryland and the comparison group, and Maryland hospitals faced challenges getting eligible patients to enroll and complete the intensive Diabetes Prevention Program in the first two years of the five-year grants.

C. Outcome trends for Medicaid beneficiaries in Maryland

The Medicaid and Children's Health Insurance Program (CHIP) in Maryland enrolled about 1.4 million people in 2021, nearly half of whom are children. We assessed regression-adjusted trends in key outcomes for Maryland's Medicaid and CHIP enrollees from 2014 to 2021. The analysis was limited to trends since 2014 because of the complexity of finding a comparison group of states with similar policy landscapes and because of the lack of data availability.

From 2014 to 2021, inpatient hospital and outpatient ED use declined considerably over time for the Maryland Medicaid and CHIP population, consistent with the model's goals and incentives and with similar trends in the Medicare FFS population (Exhibit ES.6). Per-capita inflation-adjusted total spending for Medicaid and CHIP enrollees also declined from 2014 to 2021, yet not as markedly. Hospital spending accounts for about one-third of overall Medicaid spending (Peter G. Peterson Foundation 2023), which helps explain why large reductions in hospital use did not translate into as large reductions in inflation-adjusted spending.

Exhibit ES.6. Hospital use decreased in Maryland from 2014 to 2021 for Medicaid and CHIP enrollees, as it did for Medicare populations



Source: Mathematica's analyses of Medicare FFS enrollment and claims data and Maryland's T-MSIS Analytic File data, 2014 – 2021.

Notes: (1) Trends are regression adjusted to hold population characteristics constant over time in terms of age, sex, and reason for entitlement (Medicare) and major eligibility category (Medicaid or CHIP). (2) The Medicaid/CHIP bars exclude those enrolled in both Medicare and Medicaid.

CHIP = Children's Health Insurance Program; ED = emergency department; FFS = fee for service; T-MSIS = Transformed Medicaid Statistical Information System.

Because global budgets and the quality adjustments to them apply to all payers, many of the strategies that hospitals are pursuing to reduce preventable admissions and ED visits reach both Medicaid and CHIP and Medicare populations. For example, all hospitals reported implementing enhanced discharge planning and multidisciplinary rounding across all payers to reduce readmissions. Hospitals also made several investments in alternatives to the ED that were generally not payer specific, including opening urgent care centers, partnering with behavioral health crisis centers, and partnering with emergency medical services to reduce the number of such transports for people who frequently use 911 services.

In addition to model incentives and supports, the COVID-19 pandemic led to large decreases in hospital use in 2020 and 2021 in Maryland and the rest of the nation. Nearly 35% of the total reduction in all-cause admissions—and more than 50% of the total reduction in outpatient ED visits and observation stays from 2014 to 2021—happened during the COVID-19 pandemic. This is consistent with trends to avoid hospital use generally during that time and might be even more applicable to the Medicaid and CHIP population if hospital use (related to the COVID-19 pandemic or not) for this younger population was more avoidable than it was for older and disabled Medicare beneficiaries.

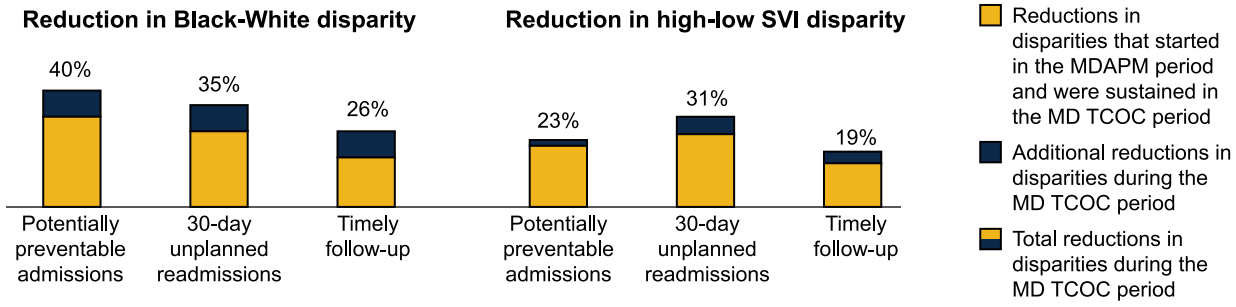
Many of the strategies that hospitals are pursuing to reduce preventable admissions and ED visits reach both Medicaid and CHIP and Medicare populations.

D. Model effects on disparities in quality of care for Medicare FFS beneficiaries

During the baseline period before the model began (2011 to 2013), there were significant disparities in preventable hospital admissions, unplanned hospital readmissions, and timely follow-up for beneficiaries based on race (non-Hispanic Black compared with non-Hispanic White beneficiaries) and place (those living in high versus low social vulnerability areas, as defined by the Social Vulnerability Index).

The model narrowed the Black–White and high–low vulnerability disparities by 19% to 40%, with most of this disparity reduction occurring by the end of the MDAPM period (Exhibit ES.7).

Exhibit ES.7. During the MD TCOC period (2019 to 2022), the model reduced disparities in quality-of-care measures, largely by sustaining reductions that started during the MDAPM period



Source: Mathematica's analysis of 2011–2022 Medicare claims data.

Note: (1) Percentage reductions in disparities are relative to what we estimate the rates would have been during the late MDAPM period (2017 to 2018) or the MD TCOC period (2019 to 2022) in the absence of the model. (2) All reductions in disparities were statistically significant at $p < 0.05$.

SVI = Social Vulnerability Index.

These large reductions in disparities are somewhat surprising, especially because they occurred before Maryland had explicitly committed to reducing disparities. Nonetheless, these effects were plausibly driven by hospital responses to global budgets. In interviews, many hospitals described targeting interventions, such as enhanced discharge planning or care management services, to those at greater risk of hospital admission or readmission. Because of historic inequities in care, this strategy could lead to Black beneficiaries or those living in high vulnerability areas to be more likely to receive new interventions under the model and thus benefit more.

Although the disparity results are generally favorable, secondary analyses temper them some. The model has increased hospital use of observation stays as a substitute for admissions. While hospitals have done this for all Medicare beneficiaries, they have done this more for Black beneficiaries and those living in high vulnerability areas—and this substitution alone could account for up to about 40% of the observed model-related reductions in disparities for preventable admissions and readmissions. This raises questions about whether these two outcomes fully capture the intended quality concept (that is, preventing the need for hospital-level care).

E. The added effects of the Maryland Primary Care Program for Medicare beneficiaries

In 2022, about half of all Medicare FFS beneficiaries in Maryland were attributed to practices that were participating in MDPCP.[5] Because MDPCP represents a significant investment of CMS and state resources, we separately estimated the added effects of MDPCP on top of the other model incentives and supports. We did this using a difference-in-differences analysis with a matched comparison group of practices drawn from *within* Maryland and a two-year baseline period (2017 to 2018) before the start of MDPCP.

We estimate that MDPCP possibly reduced all-cause admissions by 2.5% across the first four years of the program, 2019 to 2022 (Exhibit ES.8).[6] The program did not affect all-cause outpatient ED visits and observation stays but did possibly reduce non-emergent or primary-care-treatable ED visits by 3.7% ($p = 0.11$) from 2021 to 2022. MDPCP practices focused care management services on high-risk patients, which might have driven these reductions in hospital use as high-risk patients increased engagement with practices, improving the management and detection of new or worsening health conditions. Increased care management services might also have contributed to possible reductions in non-emergent or primary-care-treatable ED visits.

MDPCP increased timely follow-up after acute exacerbations of chronic illnesses and possibly reduced admissions. MDPCP cost much more than it generated in savings.

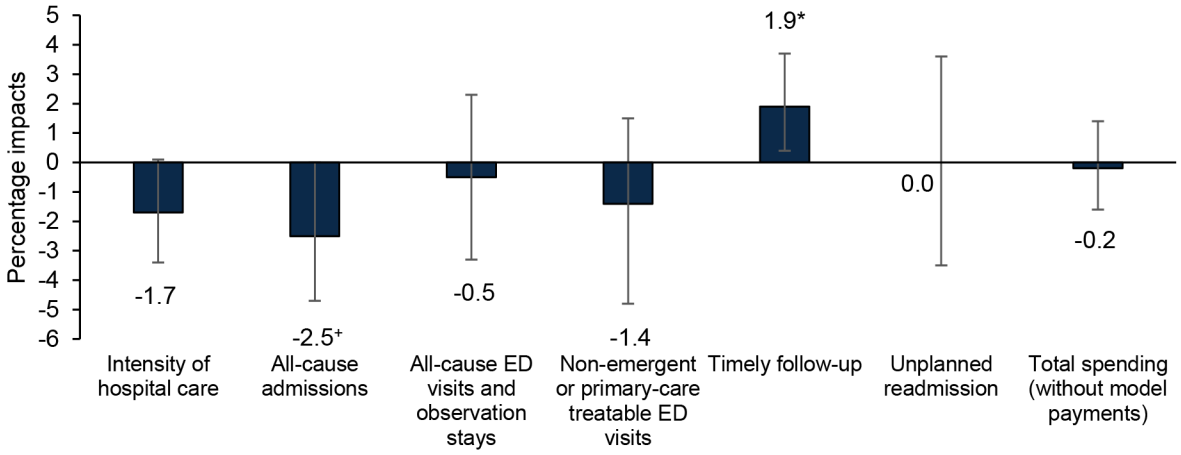
The program did modestly improve timely follow-up after an acute exacerbation of a chronic condition (1.9%, $p = 0.04$), which reflects practices' efforts to call patients after hospitalization and ED visits and schedule follow-up appointments. These efforts did not, however, translate into reductions in 30-day unplanned readmission (0.0%).

Finally, MDPCP did not significantly reduce total Medicare spending (calculated as standardized hospital spending plus non-hospital spending). Among beneficiaries attributed to MDPCP practices that started in 2019, the program saved about $5.7 million per year. These savings are not statistically different from zero ($19 per beneficiary per year, $p = 0.86$). MDPCP cost CMS an average of $96.0 million in payments made to those practices per year. Therefore, our best estimate is that MDPCP generated a net loss of $90.3 million annually from 2019 to 2022.

[5] CMS attributes a Medicare beneficiary to an MDPCP practice if that practice provided the patient's most recent visit for certain services, such as a Medicare Annual Wellness Visit, or the plurality of their primary care services in the previous two years.

[6] We use the term "possibly" for MDPCP impacts where the p-value is < 0.20 but > 0.10 and the estimate effect is 2.0% or larger. This is a decision rule we applied just to the MDPCP analysis because of relatively low statistical power to detect policy-relevant effects.

Exhibit ES.8. From 2019 to 2022, MDPCP possibly reduced hospital admissions and made some modest improvements in quality, but the investment was 17 times larger than the estimated annual savings.



Notes: (1) Total spending (without model payments) is based on a combination of non-hospital spending and standardized hospital spending. Because of data lags, the intensity of hospital care (as measured by standardized hospital spending) and total spending use 2019–2021 data only. (2) ED visits are outpatient (i.e., do not lead to an admission) and can be for any cause ("all-cause") or for reasons that are more preventable ("non-emergent or primary-care treatable"). (3) Error bars represent the 90% confidence interval. Estimates in which the intervals do not span zero are statistically different from zero at a $p < 0.10$ threshold.

* Average effect is statistically different from zero ($p < 0.10$)
+ Average effect represents "possible" impacts, defined as those in which the percentage impact is greater than 2% (in either a favorable or unfavorable direction) and the p-value is 0.10 to 0.20.

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

Beyond these outcomes, many practices participating in MDPCP reported during interviews that the program advanced their long-term capacity to deliver comprehensive primary care. They noted that the MDPCP care transformation requirements provided a road map for how to invest in care delivery changes. Further, MDPCP payments supported their efforts to improve the quality of care through changes, such as enhancements to care management services, integration of behavioral health services in the primary care setting, and efforts to screen and address beneficiaries' health-related social needs.

F. Likely Medicare spending effects of switching Maryland to the national hospital prospective payment systems

CMS has the option to transition Maryland to Medicare's inpatient and outpatient prospective payment system (PPS) for hospitals if the model does not meet cost and quality requirements. We estimated the likely long-term Medicare spending effects of switching Maryland hospitals to PPS by comparing actual mean outcomes in Maryland in 2022 with a range of projected mean outcomes under PPS based on benchmarks that look similar to Maryland drawn from the rest of the nation. Our design intentionally accounts for

Switching Maryland to the national hospital prospective payment systems would likely save Medicare more than $1 billion annually. But it would also likely disrupt access to, and the quality of, hospital care.

likely behavioral responses by hospitals in Maryland, such as increases in inpatient and outpatient hospital volume, that would offset some of the apparent savings to Medicare because of lower prices under PPS. By long term, we refer to the period when the expected behavioral responses have occurred.

We estimate that, after switching to PPS, long term total per-capita Medicare Part A and B FFS spending in Maryland would decrease by 13% relative to actual Maryland per-capita spending in 2022, amounting to total annual Medicare savings of $1.3 billion per year, with a range of $0.8 billion to more than $1.8 billion (Exhibit ES.9). The decline in total Medicare spending would be largely driven by an 18% decline in per-capita hospital spending, which primarily results from large price reductions (25%) for inpatient hospital services that are not fully offset by the estimated increase in volume (5.7%).

Exhibit ES.9. Switching Maryland to Medicare PPS would likely result in substantial reductions in annual total Medicare spending, driven primarily by reductions in hospital spending

Outcome	Percentage change, overall (range) (1)	Projected annual Medicare savings (in $ millions) overall, (range) (2)
Total Part A and B spending	-12.6% (-17.6%, -7.8%)	$1,319 ($1,853, $816)
Hospital spending, total	-17.6% (-22.4%, -13.0%)	$990 ($1,261, $735)
Inpatient hospital spending	-19.8% (-25.7%, -14.3%)	$755 ($984, $547)
Outpatient hospital spending	-13.0% (-15.3%, -10.4%)	$235 ($277, $188)

Source: Mathematica's analysis of 2022 Medicare claims data.

Notes: (1) In this exhibit, we report the projected change in Medicare FFS spending if Maryland switched to PPS. (2) Column 1 shows the estimated percentage change relative to the actual mean outcome Maryland in 2022. (3) Column 2 shows estimated annual Medicare savings amounts (in $ millions) derived by multiplying the per-capita values in column 2 by the weighted number of Maryland FFS patients in our sample (N = 721,580).

FFS = fee for service; PPS = prospective payment system.

Our estimates for Medicare spending in Exhibit ES.9 **do not** represent a comprehensive picture of all changes that would occur in Maryland after switching to PPS. This move would be very disruptive and likely result in reductions in access, quality of care, and equity. For example, there is a high likelihood that hospitals would be allowed to charge commercial payers higher prices to offset part of the reduced Medicare revenue, leading to lower accessibility and affordability for certain patients in the state. Switching to PPS could further worsen access and quality because of the likely closure of rural and safety net hospitals that rely on public payers and the elimination of public health investments that the model finances.

G. Limitations of the evaluation

The evaluation has several limitations, including the following:

- We did not assess the model's effects on population health measures such as body mass index, diabetes incidence, or overdose deaths, which are quality goals in the model but out of scope for this report.
- Without a comparison group, the Medicaid trends are only suggestive. We cannot interpret them as model effects.
- The MDPCP analysis might modestly understate the true added effects of MDPCP because of the potential for spillover of the intervention to comparison practices that are part of health systems that have other practices participating in MDPCP. In sensitivity analyses, we found modestly larger effects when removing from the comparison group those practices with the highest likelihood of such spillover.
- Because we only recently identified (in exploratory analyses) that the model substantially increased observation stay use, we have not assessed whether that shift is associated with any changes in quality of care or health outcomes, though we might explore this in the future.

H. Conclusion

For decades, Maryland has experimented with hospital payment and delivery reforms that have diverged significantly from the rest of the country. Maryland and CMS took a large step in 2014 when they introduced state accountability for per-capita hospital spending and quality-adjusted global budgets for all eligible hospitals in the state. The model continued to expand in 2019, as state accountability expanded beyond the hospital to include total Medicare spending and population health goals. The model continued to expand in 2019 with the MD TCOC Model, as state accountability grew beyond the hospital to include total Medicare spending and population health goals. CMS and Maryland also expanded incentives and supports to bring primary care providers and, most recently, specialists into the model.

During the MD TCOC period (2019 to 2022), the accumulated effects of all the reforms since 2014 have been largely favorable. The model has reduced total Medicare spending, reduced preventable hospital use, and improved a variety of quality measures. Many of these impacts began during the MDAPM period (2014 to 2018) and continued to grow during the early years of the MD TCOC period. Since 2019, however, the model has sustained but not increased effects for most service and quality measures, while effects on total Medicare spending have gotten smaller. The evaluation will continue to assess the model's effects on spending, service use, and quality through the planned end date of 2026. The evaluation's findings can help inform Maryland's and CMS's decisions about the future of the Maryland model and reforms in other states.

Chapter 1. Introduction

Key points

- The Maryland Total Cost of Care Model tests whether state accountability for health care costs, quality, and population health—along with aligned provider incentives and supports—can improve health outcomes for all Marylanders while reducing Medicare spending.
- The Maryland Total Cost of Care Model includes many components to engage a wide range of providers in transforming care throughout the state. Sorting these components by the size of the incentive or investment statewide in 2022 highlights the largest potential drivers of change.
  - All-payer hospital global budgets, which continue from the Maryland All-Payer Model, are the largest component. These budgets encourage hospitals to reduce preventable hospital use. As the volume of hospital use goes down, hospital operating costs decrease but revenues stay fixed—increasing hospitals' net income. In 2022, hospitals generated $1.1 billion in retained revenue (that is, the difference between their revenues based on global budgets and the lower revenues they would have earned due to volume reductions under a fee-for-service schedule).
  - The second largest component is the Maryland Primary Care Program. The Centers for Medicare & Medicaid Services invested $195 million in 2022 to help more than 500 primary practices improve care in specific domains, such as increasing access and providing care management services to high-risk patients. By 2022, participating practices reached about half of all Medicare beneficiaries in the state.
  - The third largest component is the set of quality adjustments to hospital global budgets. In 2022, 45 hospitals had their budgets increased or decreased based on their performance on hospital-based quality measures, such as rates of readmissions or potentially preventable in-hospital complications. Across the state, the positive adjustments totaled $86 million in 2022, and the negative adjustments totaled $102 million.
  - Several smaller components, including additional hospital incentives and grants, encourage hospitals to limit growth in total Medicare spending for beneficiaries and to improve population health.
  - The Episode Quality Improvement Program, which launched in 2022 but made no payments that year, allows specialists to share in savings from preventing complications and unnecessary care.
- The goal of this evaluation is to assess whether and how the Maryland Total Cost of Care Model succeeds in improving health and reducing Medicare spending. The Centers for Medicare & Medicaid Services and Maryland can use these evaluation findings to inform health care transformation efforts in Maryland and other states.

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. This agreement marks one of the first times that CMS has held a state accountable for total spending and population health (Sapra et al. 2019). Maryland has committed to generating $2 billion in Medicare savings, relative to national trends, over eight years (2019 to 2026). If the state 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. The state has also committed to meeting specific goals for hospital quality, care transformation, and population health. To meet these goals, Maryland and CMS created a range of incentives and supports for hospitals, primary care practices, and other providers to transform care throughout the state.

CMS is testing the MD TCOC Model under its authority to test innovative care redesigns that hold promise for reducing Medicare, Medicaid, or Children's Health Insurance Program spending while maintaining or improving quality of care for beneficiaries. CMS contracted with Mathematica to independently evaluate the MD TCOC Model. The evaluation's goal is to assess whether and how the MD TCOC Model succeeds in reducing total cost of care and improving quality. This report describes effects over four years (2019 to 2022) and what may be driving them. CMS and Maryland can use these evaluation findings to inform health care transformation efforts in Maryland and other states.

1.1. MD TCOC Model origins and goals

The MD TCOC Model builds from a long history of payment and delivery reform in Maryland (Exhibit 1.1), with increasing state accountability for cost and quality outcomes over time.

Exhibit 1.1. Over time, state accountability for health care cost and quality has grown in Maryland, as have incentives and supports to providers to transform care

	Original waiver period (1977 to 2013)	MDAPM (2014 to 2018)	MD TCOC (2019 to 2026)
Medicare financial waiver test[a]	Spending growth • Hospital only (inpatient) • Price only	Spending growth • Hospital only (inpatient and outpatient)[b] • Price and volume	Spending growth • Total: Hospital and non-hospital • Price and volume
State commitments to the Centers for Medicare & Medicaid Services to improve quality	• None	• Hospital quality	• Hospital quality • Care transformation across the health system • Population health
Hospital payments	• FFS (can encourage volume increases) • All-payer rates	• All-payer hospital global budgets (encouraging volume decreases) • Budgets adjusted for quality performance	Payments under MDAPM, plus: • Performance payments based on TCOC • Population health improvement grants
Non-hospital payments	• FFS	• FFS with waiver to allow hospitals to provide incentives to hospital-based providers	Payments under MDAPM, plus payments for: • Primary care transformation • Specialist episodes (beginning 2022)

[a] In each of the three periods, Maryland needed to meet specific financial tests to maintain its waiver authority to set prices that Medicare pays for hospital care in the state.

[b] While the state agreement establishing MDAPM required Maryland to generate Medicare per beneficiary hospital savings, the agreement also required that total Medicare FFS spending not grow faster than the nation by a percentage point in any year, or by any amount for two years in a row.

FFS = fee for service; MDAPM = Maryland All-Payer Model; MD TCOC = Maryland Total Cost of Care.

Original waiver (1977 to 2013). In 1974, Maryland—in response to rising hospital spending and rising uncompensated care—started regulating hospital prices across commercial payers and Medicaid (Murray and Berenson 2015). In 1977, CMS waived standard hospital payment policies, allowing the state to set the prices that Medicare paid for hospital services. Maryland could set these prices if the state passed a waiver test (that is, growth in Medicare spending per inpatient 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% per year), increasing total hospital spending (Murray and Berenson 2015).

Maryland All-Payer Model (MDAPM) (2014 to 2018). In 2014, CMS and Maryland launched MDAPM, which fundamentally changed how CMS held the state accountable for hospital spending and how the state regulated hospitals. The state committed to reducing the growth in *per capita* hospital spending (combining price and volume) and to improving performance on hospital quality measures such as readmissions. In turn, the state's regulatory body—the Health Services Cost Review Commission (HSCRC)—used its rate-setting authority to set prospective all-payer global budgets for hospitals in the state. Hospitals continued to bill payers on a fee-for-service (FFS) basis, but they continually adjusted their rates so that, by the end of the year, total revenue across all payers matched their prospectively set budget. These global budgets created incentives to reduce hospital volume, unlike traditional FFS incentives. If a hospital reduced its volume, its variable operating expenses went down but its revenues stayed fixed, increasing the hospital's net operating income.

MDAPM succeeded in reducing avoidable acute care, hospital spending, readmissions, and preventable in-hospital complications (Roberts et al. 2018; Sharfstein et al. 2018; Haber et al. 2018, 2019). CMS had concerns, however, that—without any constraints on total cost of care—the model might increase total costs as the costs shifted to non-hospital settings. Further, MDAPM focused its quality targets on hospital quality, leaving out other important dimensions of quality.

MD TCOC (2019 to 2026). The MD TCOC Model, which launched in 2019, expanded state accountability and corresponding incentives and supports beyond the hospital. The state is now responsible for generating total Medicare savings (covering hospital and non-hospital spending) and for improving quality measures inside and outside of the hospital (see Box 1.A). The state can also earn credits towards its savings requirements if it reduces statewide diabetes incidence.[7] The state and CMS created new incentives for primary care practices, specialists, hospitals, and community partners to redesign care to help meet these more expansive goals.

[7] The credit equals the amount that CMS would be expected to avoid in future Medicare spending on care for complications from diabetes. Maryland and CMS are currently considering adding other Outcomes Based Credits to the model—for example, for reducing hypertension.

Box 1.A. Quality goals in the MD TCOC Model

Maryland outlined these goals in its Statewide Health Improvement Strategy (HSCRC 2020a).

Hospital quality

- Reduce avoidable hospital admissions
- Reduce hospital readmissions by reducing within-hospital disparities

Care transformation across the system

- Improve timely follow-up after acute exacerbations of chronic conditions

Population health

- Reduce mean body mass index
- Reduce rates of severe maternal morbidity
- Reduce children's asthma-related emergency department visit rate
- Reduce overdose mortality

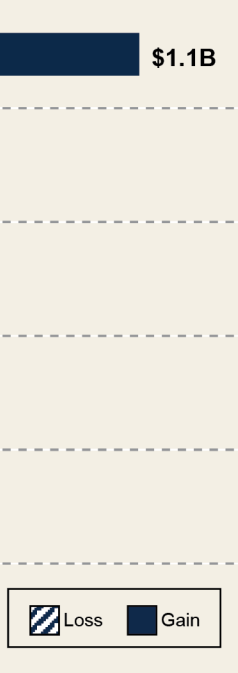
Further, in the agreement establishing the MD TCOC Model, Maryland agreed to maintain improvements achieved during the MDAPM for readmissions and hospital-acquired conditions.

1.2. MD TCOC Model components and their participants

The MD TCOC Model contains many components. Sorting them by the size of the incentive or investment statewide in 2022 highlights the largest potential drivers of change (Exhibit 1.2 and Exhibit 1.3; see Appendix A for calculations).

Exhibit 1.2. Hospital global budgets, MDPCP, and quality adjustments to global budgets were the largest potential drivers of change in the MD TCOC Model in 2022, as measured by the size of the statewide incentive or investment

MD TCOC Model component	Measure of incentive size or investment	Size of incentive or investment in 2022 ($ millions)
1. All-payer hospital budgets	Retained revenue: The difference between a hospital's revenues based on its global budget and the lower revenues it would have earned due to volume reductions under an FFS schedule[a]	−$79M / $1.1B
2. Maryland Primary Care Program	Payments to participating practices and their supporting Care Transformation Organizations	$195M
3. Quality adjustments to hospital global budgets	Adjustments to hospital budgets based on each hospital's performance on quality measures	−$102M / $86M
4. Medicare Performance Adjustment	Adjustments to hospital budgets based on each hospital's performance on total cost of care for Medicare FFS beneficiaries	−$42M / $25M
5. Regional Partnership Catalyst Grants	Competitive grant funding for hospitals for diabetes prevention and management services and for behavioral health crisis services	$27M
6. Episode Care Improvement Program	Amount hospitals received for reducing Medicare episode costs while meeting quality targets	$2M



Notes: (1) Many MD TCOC Model components include incentives, with revenues that hospitals can earn (captured in the blue shaded bars) or lose (hatched bars) based on their performance on cost and quality measures. In other components (MDPCP and Regional Partnership Grants), CMS, other payers, and the state make investments (blue shaded bars) to transform care that are largely not tied to measured performance on outcomes. (2) MDPCP payments in the figure capture CMS payments alone (they do not include state investments) and include Track 1 and 2 practices (MDPCP began a new track 3 in 2023, which is not included).

Source: Mathematica's analysis of data from the Health Services Cost Review Commission and CMS. See Appendix A for details.

[a] Hospitals that exceeded volumes built into their global budgets had negative retained revenue.

B = billion; FFS = fee for service; M = million; MDPCP = Maryland Primary Care Program; MD TCOC = Maryland Total Cost of Care.

Exhibit 1.3. The MD TCOC Model has components designed to engage hospitals, primary care practices, and specialists in care transformation, which vary in size (as measured by the statewide size of the incentives or investment in 2022)

Component	Description and purpose	Year began	Who receives the incentives or supports?	Do similar incentives exist nationally?	Participation in 2022
The largest incentives or investments under the model in 2022 (more than $100 million)					
1. All-payer hospital global budgets	Prospective all-payer global budgets designed to encourage hospitals to reduce avoidable or low-value hospital services (inpatient or outpatient)	2014	Hospitals	No	52 hospitals and free-standing EDs (out of 62 statewide)
2. Maryland Primary Care Program	New payments to support care changes that improve the quality and comprehensiveness of primary care	2019 (Tracks 1 and 2) 2023 (Track 3)	Primary care practices and CTOs	Yes, modeled after CPC+ and PCF with some differences	508 practices and FQHCs, reaching 52% of Medicare beneficiaries; 24 CTOs serving 391 practices
3. Quality adjustments to hospital global budgets	Improve performance on targeted measures, some that reinforce global budget incentives to reduce preventable hospital use and others that help protect against stinting	2014[a]	Hospitals	Partially. The quality adjustments mirror national incentives with some differences (for example, in Maryland they are all payer)	45 hospitals participated in at least one of the quality programs
Mid-range incentives or investments in 2022 ($10 million to $100 million)					
4. Medicare Performance Adjustment	Budget adjustments based on total cost of care to encourage hospitals to limit growth in total spending (not only hospital spending) for attributed Medicare beneficiaries	2019	Hospitals	No	44 acute care hospitals (all Medicare beneficiaries in Maryland attributed to a hospital)
5. Regional Partnership Catalyst Grants	Competitive grants for diabetes prevention and management and behavioral health crisis services	2021	Hospitals and their partners	No	33 hospitals and their community partners
Relatively small or no incentives in 2022 (less than $10 million)					
6. Episode Care Improvement Program	Optional episode payment programs designed to improve quality and efficiency of episodes of care beginning after hospital discharge	2019[a]	Hospitals (and potentially their care partners)	Partially, modeled after BPCI Advanced with some important differences	24 hospitals, reaching ~4% of discharges
7. Care Transformation Initiatives	Episode program similar to the Episode Care Improvement Program that gives hospitals more flexibility to design the episode (for example, length, triggering conditions) and interventions	2021 (no payments during study period)	Hospitals	No	42 hospitals, reaching 28% of beneficiaries
8. Episode Quality Improvement Program	Optional episode-based payment program for specialists for efficient episodes of care within specialty areas (for example, cardiology)	2022 (no payments during study period)	Specialists	No	About 2,000 specialists

BPCI = Bundled Payments for Care Improvement; CPC+ = Comprehensive Primary Care Plus; CTI = Care Transformation Initiative; CTO = Care Transformation Organization; ED = emergency department; FQHC = Federally Qualified Health Center; PCF = Primary Care First

[a] Some hospital quality programs pre-dated hospital global budgets but were folded into the global budget process in 2014. The measures in the quality programs have evolved over time, with new measures added to align with quality goals in the MD TCOC Model.

1.2.1. Component 1: All-payer hospital global budgets

The largest incentives in the MD TCOC Model are the hospital global budgets. These budgets began in 2014 with MDAPM and continue in the MD TCOC Model. Most hospitals in Maryland (52 of 62) receive global budgets (federal hospitals, children's hospitals, and some specialty hospitals are excluded). The budgets create strong incentives for hospitals to reduce avoidable acute care.

One way to quantify the size of the incentive to reduce volume is HSCRC's calculation of "retained revenue." Retained revenue is the difference between a hospital's revenues based on its global budget and the lower revenues it would have earned due to volume reductions under an FFS schedule (HSCRC 2022).[8] In 2022, 41 hospitals reduced volumes compared to those built into their global budgets, with retained revenue that totaled $1.1 billion across the state.[9] In contrast, 11 hospitals exceeded volumes built into their global budgets and had - $79 million in retained revenue in 2022.

1.2.2. Component 2: Maryland Primary Care Program

The second largest component in the MD TCOC Model is the Maryland Primary Care Program (MDPCP), which was designed to invest in primary care and its role in improving health outcomes while preventing unnecessary hospital use. In 2022, 508 primary care practices participated in MDPCP, reaching 65%[10] of eligible practices and a little more than half (52%) of all Medicare FFS beneficiaries in the state (see Appendix A for details). Most practices (77%) partnered with external Care Transformation Organizations (CTOs). These organizations, often run by health systems, are entities that provide partnering practices with care managers and other supports to help practices meet care delivery requirements. CMS paid practices about $138 million in 2022, increasing practice revenue by about 10%, and paid CTOs about $57 million. These payments help practices improve care in five domains (Exhibit 1.4). The Maryland Department of Health (MDH) also provides in-person coaching, webinars, virtual trainings, and other technical supports for care transformation.

Practices could join one of two tracks in 2022, with Track 2 offering more financial support in exchange for more extensive care delivery requirements. Track 2 practices also receive some payment through partial capitation, rather than only FFS, to support non-traditional modes of patient engagement.

[8] When calculating what hospitals would have earned under an FFS schedule, HSCRC uses the all-payer rates that it sets for each hospital at the start of the year (not the rates in the Medicare FFS schedule).

[9] When setting hospital budgets, HSCRC assumes that hospital volumes will be what they were in 2013, adjusted for population growth and shifts in care across hospitals. Therefore, hospital efforts that reduce volume below the adjusted 2013 levels will generate positive retained revenue.

[10] The eligible non-MDPCP practices in Maryland were defined as all practices in Maryland that have at least one primary care provider and at least 125 attributed beneficiaries at the start of 2022.

Exhibit 1.4. MDPCP requires practices to improve care in five domains

Domain	Example requirements
Access and continuity	Ensure MDPCP beneficiaries have 24/7 access to a care team or practitioner with real-time access to the electronic health record.
Care management	Ensure all empaneled MDPCP beneficiaries identified as increased risk and likely to benefit receive targeted, proactive, relationship-based care management.
Comprehensiveness and coordination across the continuum of care	Ensure MDPCP beneficiaries with behavioral health needs have access to care consistent with at least one option from a menu of options for integrated behavioral health.
Beneficiary and caregiver engagement	Convene a patient and family advisory council at least annually and integrate the council's recommendations into quality improvement activities.
Planned care for health outcomes	Continuously improve performance on key outcomes, including cost of care, electronic clinical quality measures, beneficiaries' experience, and utilization measures.

Source: The MDPCP Advancing Primary Care Guide (2021).

MDPCP = Maryland Primary Care Program.

Across all practices participating in 2022, most (70%) enhanced payments[11] to practices were in the form of quarterly care management fees, which practices could use to fund investments and expenses associated with delivering advanced primary care, such as hiring staff or operating extended office hours. Further, 17% of enhanced payments were for Health Equity Advancement Resource and Transformation (HEART) payments, which are designed to provide additional support to practices serving socioeconomically disadvantaged patients with complex needs. A small portion (13%) of payments were tied to a practice's performance on select quality measures, such as emergency department utilization and controlling high blood pressure.

1.2.3. Component 3: Quality adjustments to hospital global budgets

The third largest component in the MD TCOC Model is the set of adjustments (positive or negative) that HSCRC makes to each hospital's all-payer global budgets based on its performance on a range of quality measures. In 2022, hospitals across the state lost $102 million and gained $86 million (with some hospitals losing and others gaining) based on their performance on quality measures. Some quality measures, such as hospital readmissions, reinforce the global budget incentive to reduce avoidable hospital use. Others, such as patient experience, help to counter incentives to stint on hospital care, a potential concern under a global budget system (Berenson et al. 2016). The quality adjustments in Maryland mirror those in CMS's national Hospital Value-Based Purchasing Program, with two exceptions. First, Maryland's quality programs are based on quality performance for all payers, and CMS' program focuses on Medicare beneficiaries. Second, HSCRC has modified some quality measures to align with state priorities, including the explicit quality goals in the model. For example, in rate year 2023 (which began July 2022), HSCRC added bonus payments to hospitals

[11] Enhanced payments exclude the Comprehensive Primary Care Payment that CMS made to Track 2 practices. CMS paid practices $27 million in Comprehensive Primary Care Payments for 2022, but this replaced FFS revenue and was not enhanced payment.

to reduce within-hospital disparities in readmissions, complementing the state-wide goal to reduce readmission disparities (HSCRC 2021b).

1.2.4. Components 4 to 7: Additional hospital incentives and investments to promote efficiency and population health

A series of smaller incentives for hospitals, new since 2019, are designed to encourage hospitals to expand their care transformation efforts beyond the hospital.

- **Component 4: Medicare Performance Adjustment (MPA).** The MPA adjusts each hospital's budget based on the total Medicare spending for beneficiaries attributed to them, placing some accountability on hospitals for total cost of care. Specifically, in 2022, hospitals could earn up to 1% of their total Medicare revenue if per-capita Medicare spending for their attributed members fell below benchmarks (and could lose up to 1% if their spending landed above the benchmark).[12] In 2022, there was also a supplement to the MPA for hospitals (or their systems) that functioned as CTOs in MDPCP. That supplement further adjusted hospitals' budgets based on the total cost of care for beneficiaries attributed to the hospital through its role as CTO. In 2022, hospitals across the state lost $42 million and gained $25 million (with some hospitals losing and others gaining) through all MPA adjustments.
- **Component 5: Regional Partnership Catalyst Grants.** Many (33) hospitals have received competitive grant funding that supports work with community organizations to prevent and manage diabetes and expand behavioral health crisis services. The grants began in 2021 and run for five years. The diabetes grants focus on increasing the use of the Diabetes Prevention Program for those with pre-diabetes and the Diabetes Self-Management Training program for those with type 2 diabetes. The behavioral health grants support the development and implementation of (1) crisis call centers that link those in crisis to appropriate services; (2) community-based mobile crisis teams; and (3) short-term, sub-acute, residential crisis stabilization programs. In 2022, the 33 hospitals received a combined total of $27 million in grant funding.
- **Component 6: Episode Care Improvement Program (ECIP).** Under ECIP, hospitals select at least one of 23 clinical episodes. For their selected clinical episode(s), hospitals receive additional payments if (1) the cost of care across all non-hospital settings for 90 days after discharge falls below a benchmark and[13] (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 lands above benchmarks. Hospitals can (but are not required to) share savings with their partners, which can include post-acute care facilities. In 2022, 24 hospitals

[12] In 2022, each hospital's MPA benchmark was based on the average Medicare FFS spending for beneficiaries attributed to the hospital in 2019, trended forward at the national Medicare FFS spending growth rate. Further, HSCRC decreased the benchmark if spending in the hospital service area was high relative to peer geographic areas elsewhere in the nation (HSCRC 2021c).

[13] ECIP target prices are based on a blend of the hospital's average historical episode payments and Maryland's average historical episode payments for specific clinical episode categories. ECIP does not include inpatient payments (including the index admission or any readmissions) in target price or episode cost calculations because of the mechanics of global budgets (CRISP 2019).

participated in ECIP, but it only covered 3.6% of discharges across the state. Among participants, 11 hospitals received incentive payments that totaled almost $2 million.

- **Component 7: Care Transformation Initiatives (CTIs)**. A CTI is another voluntary episode program for hospitals. CTIs were originally planned to begin in 2020 but were delayed due to the COVID-19 pandemic until 2021. Under CTIs, hospitals have flexibility to define their episode types, partners, interventions, and episode duration (which can range from 30 to 365 days) and baseline period. Hospitals define episodes that fit within thematic areas, which include care transitions, primary care transformation, and emergency care. Unlike ECIP, which focuses on non-hospital spending, CTIs include both hospital and non-hospital spending when calculating episode spending.[14] In 2022, 42 hospitals participated in CTIs reaching 28.4% of beneficiaries across the state. No payments were made for CTIs, however, until 2023.

1.2.5. Component 8: Episode Quality Improvement Program

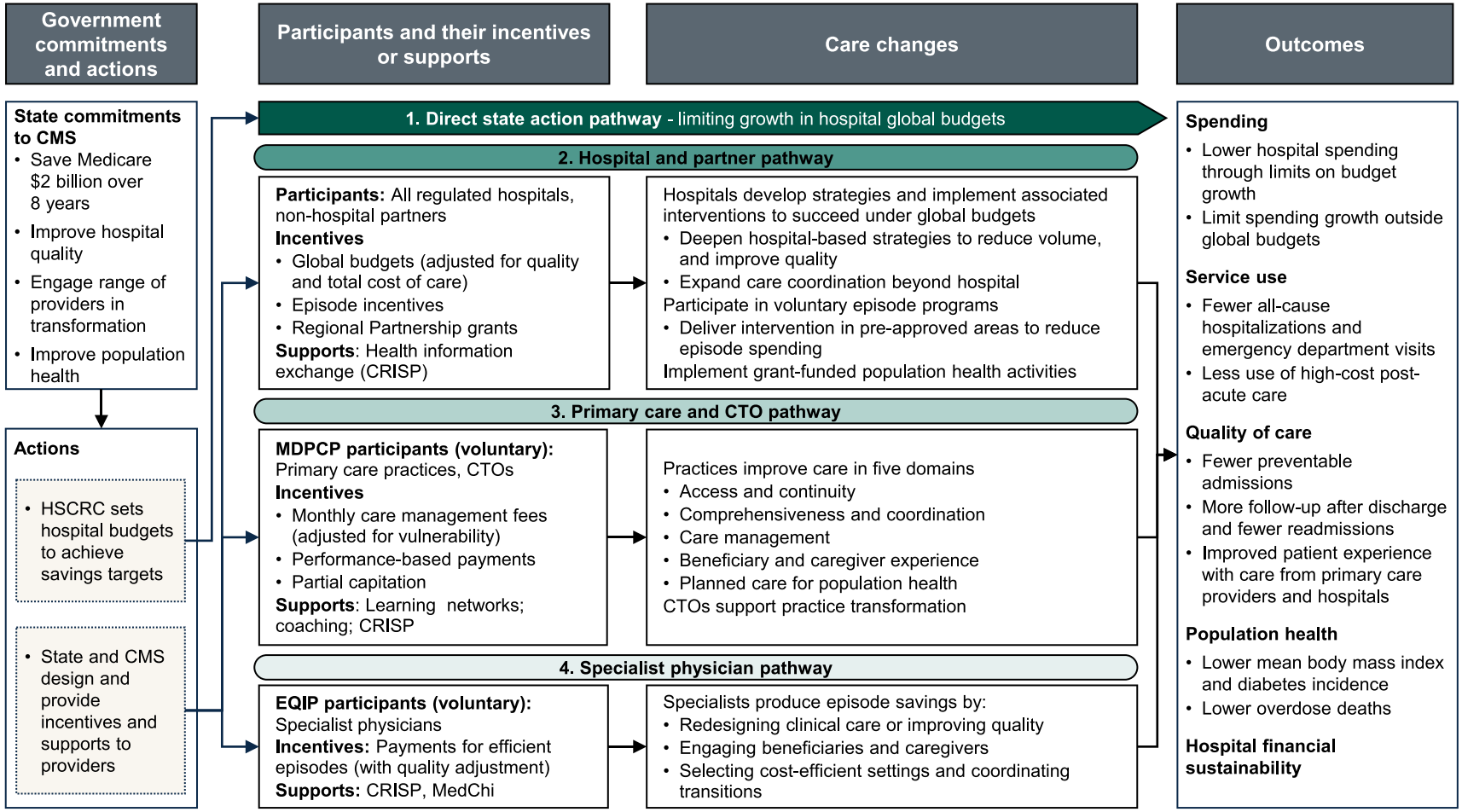
Finally, in 2022, Maryland launched a new episode program for specialists—called the Episode Quality Improvement Program. This program allows specialists to share in savings if they reduce the Medicare FFS cost of care for episodes of care they manage (for example, a hip replacement surgery and related pre- and post-operative care) while meeting quality goals. The state modeled this after a similar program for CareFirst patients, aiming to align incentives across payers.

1.3. How the MD TCOC Model could improve outcomes statewide

We have organized the MD TCOC Model components into a logic model with four pathways to outcome improvements (Exhibit 1.5). The MD TCOC Model has evolved over time and continues to evolve. This logic model reflects components of the MD TCOC Model in 2022 and current ways the model aims to improve outcomes statewide.

[14] Technically, HSCRC uses standardized hospital spending when calculating episode spending for CTIs. This standardization process removes the global budget influence on hospital spending and means that if a hospital reduces admissions or readmissions, its episode costs will go down. In this sense, the global budget incentives and CTIs both encourage hospitals to reduce admissions.

Exhibit 1.5. The MD TCOC Model could reduce spending and improve care and population health through four pathways.



CMS = Centers for Medicare & Medicaid Services; CRISP = Chesapeake Regional Information System for Our Patients; CTO = Care Transformation Organization; EQIP = Episode Quality Improvement Program; HSCRC = Health Services Cost Review Commission; MedChi = The Maryland State Medical Society; MDPCP = Maryland Primary Care Program.

1.3.1. Direct state action pathway

First, in the *direct state action pathway*, HSCRC directly helps the state meet financial requirements by limiting the growth in all-payer hospital global budgets via their rate setting authority. The model has three financial requirements: (1) the model must generate annual Medicare Part A and B savings, relative to national trends, that grow from $120 million in 2019 to $300 million in 2023 (adding to $2 billion over 8 years), (2) keep Medicare spending growth in any single year within 1 percentage point of national growth (and not let spending growth in two consecutive years exceed national growth by any amount), and (3) keep all-payer hospital annual spending growth at or below 3.58%, the long-term growth in the state economy. Each state fiscal year, HSCRC sets all-payer global budgets for almost all hospitals in the state, basing the budget on each hospital's prior year budget plus inflation, changes in population, and other factors. HSCRC then projects whether the planned update in hospital budgets will meet the model's various financial tests. If not, HSCRC can reduce the update amount until it is projected to meet savings requirements.

This direct policy lever is strong for two reasons. First, HSCRC sets budgets for nearly all hospitals in the state. Second, hospital spending accounts for a little more than half of all Medicare spending in the state. So, by setting hospital budgets, HSCRC directly influences total Medicare spending in the state and, therefore, whether the state will meet savings targets.

Although the total per capita savings requirements are specific to Medicare, HSCRC's decisions on budget growth could also generate savings to Medicaid. The budgets that HSCRC sets are all-payer, so any limits it places on all-payer budget growth to meet Medicare savings targets would also limit spending on hospital care from other payers, including Medicaid. In Maryland, most Medicaid beneficiaries are enrolled in managed care plans. So, reductions in Medicaid spending would occur by Medicaid reducing the amount it pays managed care plans to cover hospital care.

1.3.2. Hospital and care partner pathway

Second, in the *hospital and care partner pathway*, hospitals respond to all-payer global budget and quality incentives by investing in ways to reduce avoidable acute care and improve performance on quality measures. The model is not prescriptive in how hospitals should reduce avoidable acute care or improve quality measures, and hospitals can take different strategies. For example, some might invest in nurse care managers to reduce the need for admission from the emergency department, others might improve discharge planning to reduce risk of readmissions, and still others might invest in population health initiatives in their community that can prevent the need for acute care.

Hospitals might also join voluntary episode programs (ECIP or CTIs), coordinating with non-hospital providers to improve the efficiency and quality of episodes of care. For example, hospitals could increase use of home health after discharge as an alternative to more costly stays in skilled nursing facilities. Finally, hospitals can compete for Regional Partnership Grants and use the funds to work with providers and community partners to increase services to prevent and

manage diabetes and better manage behavioral health crises, potentially improving population health outcomes in these areas.

Hospital responses to global budget incentives can also improve their financial performance, making the model more sustainable. If HSCRC limits the growth in hospital budgets to meet savings targets, this could—all else equal—strain hospital finances. However, if hospitals respond to global budget incentives by reducing volume, this will reduce their operating expenses. As a result, hospital operating margins (a function of both the size of a hospital's budget and its operating expenses) could remain steady or even increase under the model, which would make the model more financially sustainable for hospitals.

1.3.3. Primary care and CTO pathway

Third, in the *primary care pathway,* primary care practices and CTOs use MDPCP funding to advance practices' primary care capabilities. Practices must meet the program's care transformation requirements, which often require them to expand or implement new services. The requirements focus on activities that have the potential to reduce avoidable emergency department use and inpatient use by improving patients' health. For example, practices could provide care management services to high-risk beneficiaries, helping patients to identify and prevent exacerbations of chronic conditions that would otherwise require hospitalization. Practices could also expand office hours into the evening and weekends, reducing the need for patients to go to the emergency department for urgent care. Practices might also coordinate with hospitals to follow up with patients soon after discharge from the hospital, improving post-discharge care and reducing the risk of readmission. Practices' efforts to improve care coordination and manage specialist referrals could reduce spending on specialty services. To meet transformation requirements, practices could also work to prevent and manage diabetes by tracking electronic clinical quality measures related to body mass index screening and diabetes control and by providing patients with support to reduce the risk of developing diabetes, sometimes through referrals to the Diabetes Prevention Program. Practices could also work to implement evidence-based approaches to screen and identify people engaged in substance use and then deliver early brief interventions and referrals to treatment that can help address opioid use.

1.3.4. Specialty pathway

Fourth, in the *specialty pathway,* specialists can join EQIP to improve the efficiency and quality of episodes of care (HSCRC 2021d). For example, specialists can implement standardized evidence-based protocols to reduce preventable complications, offer health literacy education for patients and families, and assign a care manager to follow patients across care settings. Within the specialist's episode program, each episode has a single target price irrespective of care

setting. This serves to further encourage the shift of lower acuity procedures to less costly settings such as from the hospital to an ambulatory surgical care center.[15]

1.4. How the MD TCOC Model could improve health equity

The MD TCOC Model could improve health equity in two ways. First, CMS and Maryland have recently introduced model incentives and supports that explicitly aim to improve equity. Starting in 2020, the model has explicitly aimed to reduce disparities in readmissions (HSCRC 2020a). In 2022, HSCRC introduced incentive payments to hospitals for reducing within-hospital disparities in readmissions. Further, in that same year, CMS opened MDPCP participation to Federally Qualified Health Centers and created HEART payments, which practices could use to provide extra support to medically complex patients who reside in communities considered to be highly socioeconomically disadvantaged. These improvements in primary care could improve patients' health, reducing need for admissions or readmissions.

Second, the model's broader incentives and supports could improve equity, even though doing so is not an explicit goal. For example, Black beneficiaries, on average, have higher hospital readmission rates than White beneficiaries in Maryland, reflecting inequities in care (see Chapter 4). If hospitals respond to global budget incentives by enhancing discharge planning to beneficiaries most at risk to readmission based on our current data and its suggestions, this potentially leads to Black beneficiaries being more likely to receive and benefit from such services.

1.5. Evaluation goals and methods

The overall goal of this evaluation is to assess whether and how the MD TCOC Model succeeds in improving health and reducing Medicare spending. Although MDAPM and MD TCOC are distinct models (and established by separate legal agreements), we conceptualize them as parts of an overarching and evolving Maryland Model for the purpose of estimating impacts (Exhibit 1.6). Throughout this report, when we use the term "the model", we are referring to the Maryland Model. We estimate model impacts each year, from 2014 to 2022, relative to an estimate of what would have occurred in the state if Maryland and CMS had not made any of the changes they did starting in 2014. This approach allows us to estimate (1) the accumulated effects of all changes during the MDAPM and MD TCOC periods and (2) how much effects grew during the MD TCOC period compared with the effects achieved at the end of the MDAPM period (2017 to 2018). Accordingly, when identifying possible drivers of effects, we consider changes that started with the MDAPM period in 2014 (most notably hospital global budgets) and changes that began with the MD TCOC period in 2019 (like the addition of MDPCP).

[15] Although we consider the specialist pathway an important part of the model logic, we have not explored implementation of this path—and how it could affect model outcomes—because it was out of scope for this report and it started in 2022, so it could affect outcomes in one year of the period covered for impacts at most. We plan to include the specialist pathway in future reports.

Exhibit 1.6. The Maryland Model has evolved over time, with growing state accountability for health care costs and quality

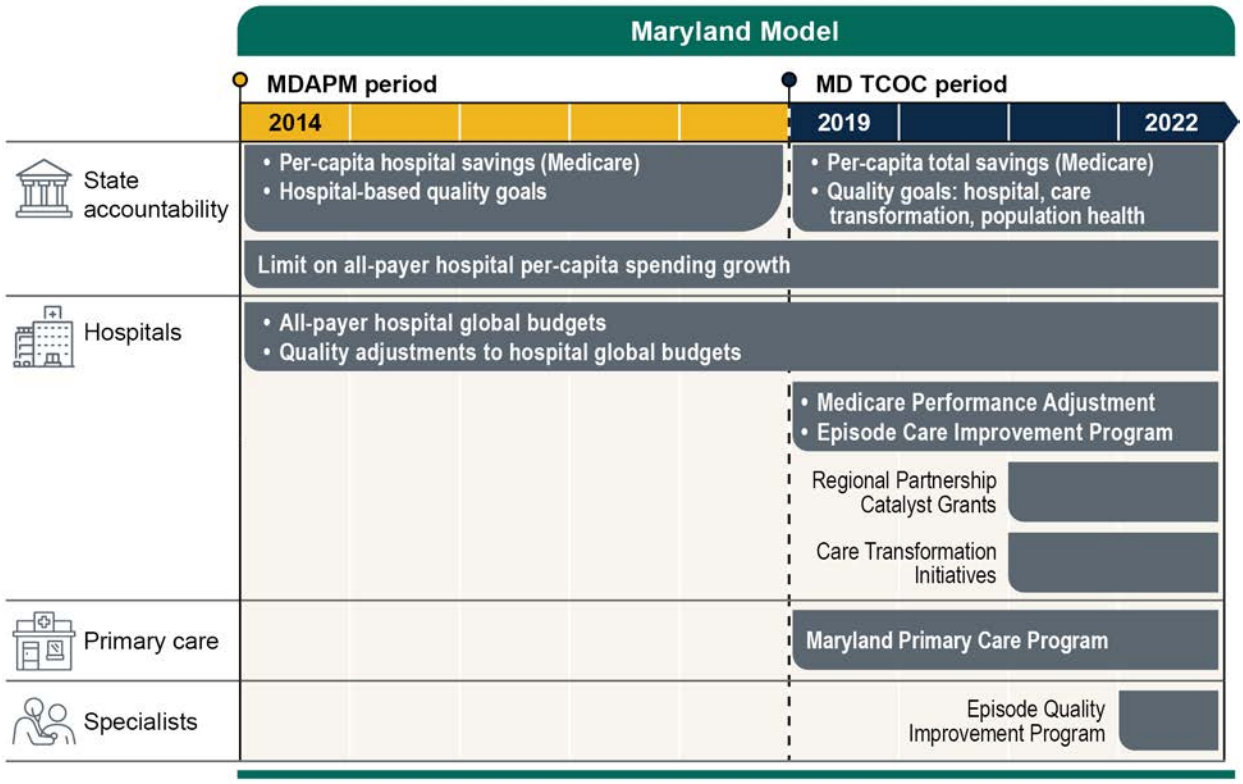


Exhibit 1.7 summarizes the specific evaluation goals, as well as methods we are using to meet them.

Exhibit 1.7. We are using a variety of methods to meet the evaluation goals

Evaluation goal	Method
Estimate effects of the Maryland Model for Medicare beneficiaries statewide	Compare outcome trends in Maryland with those in a nationally matched sample
Describe trends in outcomes for Medicaid beneficiaries	Describe outcome trends within Maryland and compare them with the model's goals
Estimate effects of the Maryland Model on health equity	Reuse main impact estimation approach, subsetting to groups based on race and place
Estimate the added effects of MDPCP on top of other model components	Compare outcome trends for MDPCP practices with those of a *within-state* matched comparison group
Describe what might be driving observed model effects	Use interviews with providers, a hospital survey, and program metrics to identify major care changes that could drive effects
Describe likely spending effects of switching Maryland hospitals to the PPS	Compare spending in Maryland with those in similar areas nationally that represent where Maryland might head after the switch

Note: By "Maryland Model" we mean the single, evolving model that began with the MDAPM period in 2014 and grew in statewide accountability and associated provider incentives and supports in the MD TCOC period in 2019.

MDPCP = Maryland Primary Care Program; PPS = prospective payment system.

The statewide impact estimates reflect the effects of all model components combined, not individual model components. We use provider interviews, surveys, and secondary metrics about the individual components, however, to identify what might be driving overall model effects. One exception is that, because of the substantial federal and state investment in MDPCP, we separately estimate the added effect of that model component on top of the other model incentives and supports.

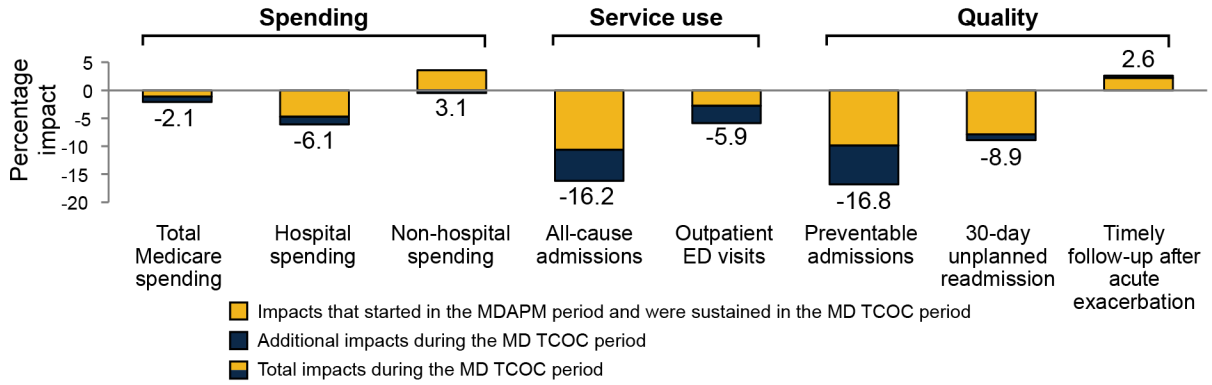
We selected outcomes for the evaluation to align with the cost, service use and quality goals for the model, as described in the state agreement establishing the model, the Statewide Health Improvement Strategy (SIHIS), and the logic model (Exhibit 1.5). We did not assess model impacts on all SIHIS outcomes, including some population health measures, because doing so was out of scope for this report. Appendix A shows the alignment between the measures selected and those in the state agreement and SIHIS.

Chapter 2. Statewide Effects of the Maryland Model for Medicare Fee-For-Service Beneficiaries

Key findings

- In the first four years of the MD TCOC period (2019 to 2022), the model reduced total Medicare Part A and B spending and improved service use and quality measures. Many of these impacts began during the MDAPM period and were sustained into the MD TCOC period, but most outcomes also showed additional gains (Exhibit 2.1).

Exhibit 2.1. During the MD TCOC period (2019-2022), the model reduced Medicare spending and service use and improved quality measures



Note: Total impacts during the MD TCOC period were statistically different from zero for all outcomes shown at a $p < 0.10$ threshold.

ED = emergency department.

- Through its all-payer hospital global budget-setting authority, Maryland limited the growth in statewide hospital spending over time to meet savings targets. This lowered hospital spending from what it would have been without the model by an average of 6.1% from 2019 to 2022, more than offsetting increases in non-hospital spending.
- The model reduced admissions and improved related quality measures largely because the quality-adjusted hospital global budgets spurred hospitals to implement care changes that reduce preventable hospital use and shift care to lower-acuity settings. In addition, the Maryland Primary Care Program may have contributed modestly to reductions in hospital use.
- Since 2019, the model has sustained but not increased effects for most service and quality measures, while effects on total Medicare spending have gotten smaller.
  - The flattening of impacts on hospital service use and related-quality measures is likely due to earlier large model impacts and declines in hospital use during the COVID-19 pandemic, both of which left less room for further improvement. The COVID-19 pandemic also disrupted some hospital interventions, such as enhanced discharge planning, that were meant to improve outcomes.
  - Total Medicare savings declined, in part, because the model effectively prioritized stability in hospital financing during and after the COVID-19 pandemic over generating additional hospital savings. Meanwhile, the model continued to increase non-hospital spending as hospitals, or their systems, shifted care to non-hospital settings. Sizable CMS payments for the Maryland Primary Care Program further strained the model's ability to generate savings.

The Maryland Model (referred to throughout as "the model") began in 2014 with the introduction of all-payer quality-adjusted global budgets and continued in 2019 with added incentives and supports focused on the total cost of care and population health. In this chapter, we estimated the yearly effects of the model and all its components statewide on key outcomes for Medicare fee-for-service (FFS) beneficiaries from 2014 to 2022.

2.1. Methods

We estimated the effects of the model statewide by comparing changes in outcomes for all Medicare FFS beneficiaries in Maryland with changes in outcomes for beneficiaries in a matched comparison group drawn from the rest of the country. We designed the matched comparison group to estimate the counterfactual. The counterfactual is the outcome trend that would have occurred in Maryland if Maryland and CMS did not make any of the payment and delivery reforms they did starting in 2014, including the additional reforms in 2019. To construct the comparison group, we matched Maryland's 44 Public Use Microdata Areas (PUMAs)[16] with 553 comparison PUMAs drawn from the rest of the country. We matched on basic characteristics of the area (such as demographics), characteristics of the health systems, and outcome levels and trends for Medicare FFS beneficiaries.

The design uses difference-in-differences regression models to estimate impacts. The regression models controlled for beneficiary-level demographic characteristics, such as age, race, and gender; an area-level measure of social vulnerability; and a specific set of time-varying chronic health conditions.[17] We estimated effects each year, from 2014 to 2022, using 2011 to 2013 as a baseline. The focus of our interpretation is on estimates during the MD TCOC period (2019 to 2022), but we also include estimates of how those MD TCOC period effects compare with the effects at the end of the Maryland All-Payer Model (MDAPM) period (2017 to 2018). Appendix B has more details on design, matching, and regression specifications and includes results from sensitivity tests that controlled for COVID-19 hospitalizations and emergency department (ED) visits, which were very similar to the main impact estimates.

In this report, we estimated statewide effects of the model on 13 outcomes organized into categories with similar or related drivers of effects, including Medicare FFS spending, service use and quality of care, patient experience, and the Medicare Diabetes Prevention Program (DPP). Outcomes and the favorable direction for their effects are listed in Exhibit 2.2.

[16] PUMAs are similar to counties, but they break populous counties into smaller units and aggregate sparsely populated counties into larger units to reach about 100,000 people in each.

[17] The chronic condition controls helped to correct for changes in the FFS population in Maryland versus the comparison group over time that stem from low rates of managed care enrollment in Maryland. In Appendix B, we show the impact results when we remove those condition controls. In general, the effects of the model are moderately more favorable after removing health conditions, but many of the high-level inferences, including trends in impacts, are the same.

To help understand what drove the measured impacts of the model, we fielded a hospital survey to the chief financial officers of all acute care Maryland hospitals and conducted in-depth site visits to seven hospitals (see Appendix B.3). We also analyzed program data to identify changes that hospitals and providers made during, and in response to, the model. We considered a particular change to be a potential driver of model effects if the change was substantial and—per the logic model—expected to influence outcomes.

Exhibit 2.2. Outcomes measured for statewide effects of the model and their favorable direction

Outcome	Favorable direction
Medicare FFS spending	
Total Medicare FFS Part A and B spending	↓
Total Medicare FFS Part A and B spending including non-claims payments	↓
Hospital spending	↓
Non-hospital spending	↓ or ↑[a]
Service use and quality of care	
All-cause acute care hospital admissions	↓
Outpatient ED visits and observation stays[b]	↓
Intensity of hospital care (measured by standardized hospital spending)	↓
Potentially preventable admissions	↓
30-day post-discharge unplanned readmissions	↓
Timely follow-up after acute exacerbation of chronic conditions	↑
Patients' experience	
Patients' rating of their personal doctor	↑
Patients' rating of their hospital	↑
Medicare Diabetes Prevention Program	
Use of Medicare Diabetes Prevention Programs services	↑

Note: Arrows indicate the direction that would represent favorable model effects. For example, a downward arrow indicates that a reduction in the outcome is considered favorable.

[a] The model could have favorable effects on non-hospital spending if it reduced non-hospital spending or increased it by less than the decreases in hospital spending, leading to total Medicare savings.

[b] This measure includes all outpatient ED visits that did not result in an inpatient admission. It also includes hospital observation stays for beneficiaries who did not come through the ED.

ED = emergency department; FFS = fee for service.

2.2. Characteristics of the study population

About 775,000 Medicare FFS beneficiaries lived in Maryland in 2022, which is nearly 70% of the total Medicare population in the state (Exhibit 2.3).[18] Nationwide, a much smaller share (46%) of the total Medicare population was FFS in 2022, which reflects growing enrollment in Medicare Advantage (KFF 2023a).

[18] We define the FFS population in a given year as all beneficiaries who were alive and enrolled in Medicare FFS Part A and B with Medicare as primary payer for at least 1 month of the calendar year.

Compared with the national Medicare FFS population, Maryland beneficiaries were slightly older, were more likely to be non-Hispanic Black, and had a slightly higher prevalence of type 2 diabetes. On average, Maryland beneficiaries were also less likely to live in rural areas (as defined by the urban-rural classification of the U.S. Census Bureau [2023]) and less likely to live in areas with high levels of social vulnerability as defined by the Centers for Disease Control and Prevention (CDC) Social Vulnerability Index.

Exhibit 2.3. Compared with the national Medicare FFS population in 2022, Maryland's FFS Medicare population was more likely to be Black and less likely to live in rural or high vulnerability areas

Measure	Maryland	National Medicare FFS population
Number of FFS Medicare beneficiaries (share of total Medicare population)	777,372 (68.9%)	30,451,641 (45.7%)
Average age	72.1	71.9
Percentage non-Hispanic Black	22.8%	7.0%
Percentage non-Hispanic White	69.5%	83.0%
Percentage Hispanic	2.8%	5.7%
Percentage dually eligible for Medicaid and Medicare	17.0%	16.3%
Percentage with an original reason for Medicare entitlement other than aged (that is, disability or ESRD)	18.2%	19.1%
Percentage with type 2 diabetes	23.7%	21.2%
Percentage with chronic obstructive pulmonary disease	7.1%	7.9%
Percentage with congestive heart failure	11.3%	11.9%
Percentage with ischemic heart disease	25.1%	25.0%
Percentage living in rural areas	12.1%	19.9%
Percentage living in high vulnerability areas[a]	15.7%	24.9%

Note: The table shows statistics for the total number of unweighted Medicare beneficiaries in Maryland and the nation.

[a] High vulnerability was defined as the top tertile of the Social Vulnerability Index

FFS = fee for service; ESRD = end-stage renal disease.

2.3. Model effects on Medicare FFS spending and their possible drivers

We interpret the effects of the Maryland Model (referred to throughout as "the model") as the difference between the outcomes that occurred in Maryland and what we estimate would have occurred if Maryland and CMS had not introduced any of the changes they did since 2014. This means that model effects in 2019, for example, include effects attributable both to early model changes, such as quality-adjusted global budgets in 2014, as well as new model changes, such as the Maryland Primary Care Program (MDPCP) in 2019. We focus on effects during the MD TCOC period (2019 to 2022) but also compare them with estimates from the end of the MDAPM period (2017 to 2018). This approach helps to clarify how much of the effects during the MD TCOC period are the result of earlier impacts that were sustained in the MD TCOC period versus additional gains during that period.

2.3.1. Effects

We estimated effects of the model on Medicare FFS spending in two ways. The first approach estimated effects through 2022 using Medicare FFS claims for medical services covered under Medicare Part A and B. The second approach used the same claims but then added payments that CMS made to providers in Maryland and in the comparison group to support care transformation outside standard FFS claims. For example, we included the monthly fees CMS paid practices participating in MDPCP and practices in the comparison group that were participating in other federal primary care initiatives.[19] Because of lags in data availability, we estimated effects including these non-claims payments through 2021.

2.3.1a. Total Medicare FFS spending

Effects on Medicare Part A and B spending

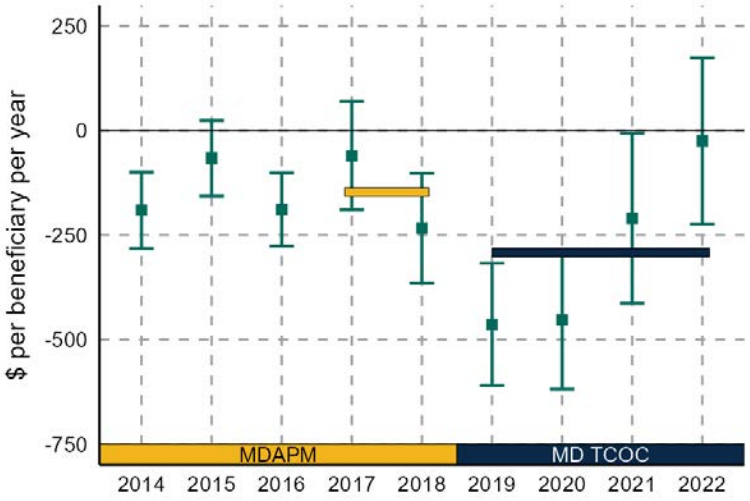
- Over the first four years of the MD TCOC period (2019 to 2022), the model decreased total Medicare Part A and B spending by an average of $292 per beneficiary per year (PBPY) or 2.1% (90% confidence interval [CI]: $451, $133) (Exhibit 2.4).
- The model decreased spending by $145 PBPY (or 1.0 percentage points) more during the MD TCOC period than it did during the last two years of the MDAPM period (90% CI: $241, $48).
- Model effects on total spending were smaller in 2021 and 2022 than they were in the first two years of the MD TCOC period and not statistically different from zero in 2022.

Effects on Part A and B spending including non-claims payments

- During the MD TCOC period, the model's effects on total spending were smaller after accounting for non-claims payments, particularly in 2021 (Exhibit 2.5).
- Smaller effects were primarily because of growing payments to MDPCP. MDPCP had a much larger reach in Maryland (52% in 2022; see Chapter 1) than other CMS primary care initiatives such as Primary Care First had in the comparison group (less than 10% for Primary Care First and Comprehensive Primary Care Plus combined; see Appendix B.2.1).

[19] We also include non-claims payments for accountable care organizations, Comprehensive Primary Care Plus, Primary Care First, and bonuses to providers for participating in advanced payment models. See Appendix B for details.

Exhibit 2.4. On average, the model reduced total Medicare Part A and B spending during the MD TCOC period but had less favorable effects in 2021 and 2022 than in 2019 and 2020



	Estimated impact	
	$ per beneficiary per year (CI)	Percentage[b]
Average at the end of MDAPM period (2017 and 2018)	**-$147* (-$272, -$23)**	**-1.1%**
Average during the MD TCOC period (2019 to 2022)	**-$292** (-$451, -$133)**	**-2.1%**
Difference[a]	-$145** (-$241, -$48)	-1.0pp

Notes: (1) Green squares represent the impact estimates each year from 2014 to 2022, with error bars representing the 90% confidence interval. Horizonal yellow and blue bars represent the average yearly impact during the last two years of MDAPM and the full MD TCOC period, respectively. (2) Estimates in which the intervals do not span zero are statistically different from zero at a $p < 0.10$ threshold.

[a] This is the percentage impact in 2019 to 2022 minus the percentage impact in 2017 and 2018.

[b] This is the impact estimate divided by the unadjusted Maryland mean minus the impact estimate.

* $p < 0.10$; ** $p < 0.05$.

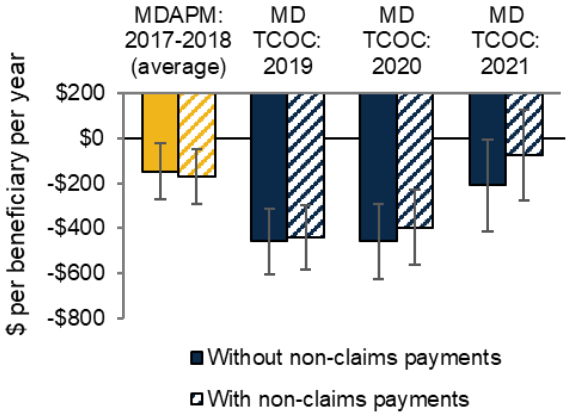
pp = percentage point.

Total net savings to Medicare

We estimate the model generated $689 million in net savings to Medicare over the first three years (2019 to 2021).[20] This result is based on the impact estimates that include non-claims payments, which are an important part of the model's effects on overall Medicare spending. We did not estimate savings through 2022 because we did not have non-claims payments for 2022 at the time of this report.

CMS evaluations may describe model effects in terms of gross and net savings, defining gross savings as the savings generated directly from reductions in FFS Medicare claims and net savings as those savings after factoring in the model costs to CMS. Using this terminology, the $689 million reflects the

Exhibit 2.5. During the MD TCOC period, after accounting for non-claims payments, effects on total spending were smaller, particularly in 2021



Notes: (1) Solid colored bars represent estimated effects of the model on total spending without non-claims payments, and striped bars include non-claims payments. Error bars are 90% confidence intervals for the impact estimates. (2) Estimates in which the intervals do not span zero are statistically different from zero at a $p < 0.10$ threshold.

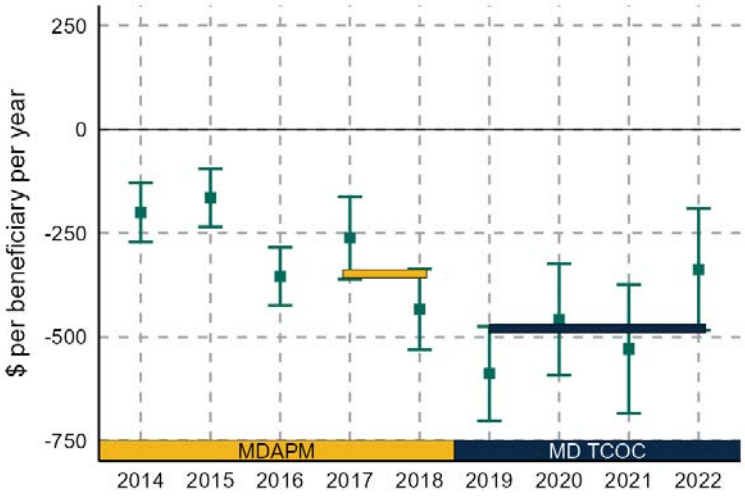
[20] These estimates do not include any model effects on Medicare Part D drug spending.

net savings for the model from 2019 to 2021 because it includes all model costs (including payments made to MDPCP practices). We do not, however, have a corresponding estimate of gross savings (that is, savings before accounting for additional payments CMS made to fund the model). This is because we consider much of the additional model costs to CMS come not through new types of model payments, as is the case in many CMS initiatives, but because the model has increased the prices that Medicare pays on standard claims for hospital care.[21] We interpret these price increases as additional costs to CMS that would not have been incurred without the model but we have not separately estimated model impacts on prices..

2.3.1b. Hospital spending (inpatient and outpatient)

- The model substantially reduced hospital spending by an average of $480 PBPY or 6.1% in the first four years of the MD TCOC period (90% CI: $603, $357) (Exhibit 2.6).
- The reduction in hospital spending during the MD TCOC period was about $132 PBPY (1.7 percentage points) larger than it was at the end of the MDAPM period (90% CI: $204, $60).
- Since 2019, model effects on hospital spending have been mostly similar. However, in 2022, the estimated yearly reduction in hospital spending ($338 PBPY) was meaningfully smaller than it was in 2019 ($589 PBPY).

Exhibit 2.6. The model substantially reduced hospital spending during the MD TCOC period, with effects that were similar in most years, but smaller in 2022



	Estimated impact	
	$ per beneficiary per year	Percentage[b]
Average at the end of MDAPM period (2017 and 2018)	**-$348** (-$442, -$255)**	**-4.7%**
Average during the MD TCOC period (2019 to 2022)	**-$480** (-$603, -$357)**	**-6.1%**
Difference[a]	-$132** (-$204, -$60)	-1.4pp

Notes: (1) Green squares represent the impact estimates each year from 2014 to 2022, with error bars representing the 90% confidence interval. Horizonal yellow and blue bars represent the average yearly impact during the last two years of MDAPM and the full MD TCOC period, respectively. (2) Estimates in which the intervals do not span zero are statistically different from zero at a $p < 0.10$ threshold.

[a] This is the percentage impact in 2019 to 2022 minus the percentage impact in 2017 and 2018.

[b] This is the impact estimate divided by the unadjusted Maryland mean minus the impact estimate.

* $p < 0.10$; **$p < 0.05$.

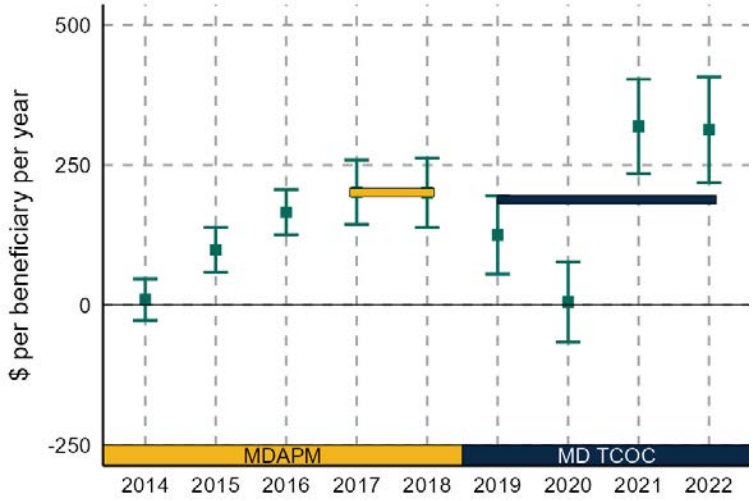
pp = percentage point.

[21] Outside of Maryland, hospitals cannot change the prices they charge when volumes decline. In Maryland however, hospitals increase their prices when volumes go down so that they still receive their full budget by year's end.

2.3.1c. Non-hospital spending

- In the first four years of the MD TCOC period, the model increased non-hospital spending by $188 PBPY or 3.1% (90% CI $116, $259) (Exhibit 2.7).
- The increase in non-hospital spending of 3.1% during the MD TCOC period was about the same as the increase at the end of the MDAPM period (3.6%).
- Though average effects on non-hospital spending during the MD TCOC period look similar to average effects at the end of the MDAPM period (right panel, Exhibit 2.7), the yearly estimates show very different patterns (left panel, Exhibit 2.7).
  - During the MDAPM period, the model increased non-hospital spending by increasing amounts each year, with the largest increases in the last two years of the MDAPM period.
  - Then, in the first year of the MD TCOC period, the trend reversed some, falling further in 2020, the first year of the COVID-19 pandemic, when we see no model effects on non-hospital spending.
  - Effects in 2021 and 2022, however, were much larger than in 2019 and 2020, largely resuming the model's trend in effects during the MDAPM period.

Exhibit 2.7. The model increased non-hospital spending during the MD TCOC period, with larger increases in 2021 and 2022 than in earlier years



	Estimated impact	
	$ per beneficiary per year	Percentage[b]
Average at the end of MDAPM period (2017 and 2018)	**$201** ($143, $259)**	**3.6%**
Average during the MD TCOC period (2019 to 2022)	**$188** ($116, $259)**	**3.1%**
Difference[a]	-$13 (-$60, $34)	-0.5pp

Notes: (1) Green squares represent the impact estimates each year from 2014 to 2022, with error bars representing the 90% confidence interval. Horizonal yellow and blue bars represent the average yearly impact during the last two years of MDAPM and the full MD TCOC period, respectively. (2) Estimates in which the intervals do not span zero are statistically different from zero at a $p < 0.10$ threshold.

[a] This is the percentage impact in 2019 to 2022 minus the percentage impact in 2017 and 2018.

[b] This is the impact estimate divided by the unadjusted Maryland mean minus the impact estimate.

* $p < 0.10$; ** $p < 0.05$.

pp = percentage point.

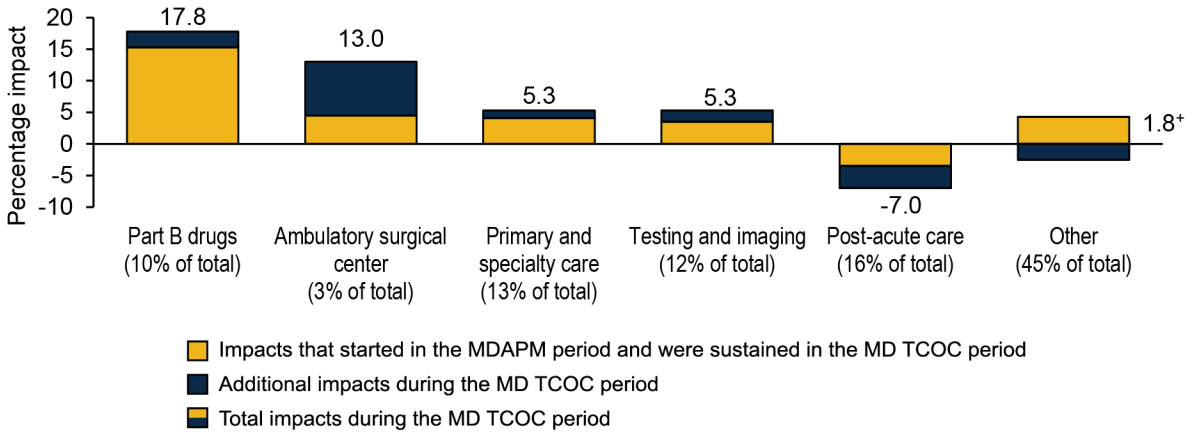
Non-hospital spending categories

Effects on non-hospital spending during the MD TCOC period came from several categories, including most prominently Medicare Part B drug spending ($112 PBPY, 17.8%), which covers

some chemotherapy drugs that can be administered in an office setting. The model also increased ambulatory surgical center spending ($23 PBPY, 13.0%), spending related to testing and imaging ($39 PBPY, 5.3%), and ambulatory spending (primary and specialist care) ($42 PBPY, 5.3%) (Exhibit 2.8). All the effects for non-hospital spending categories were larger during the MD TCOC period than they were at the end of the MDAPM period, which is consistent with growing increases in non-hospital spending as hospitals move care out of the hospital (see Appendix B.1.8).

But the model also reduced one of the largest categories of non-hospital spending, post-acute care, by $78 PBPY or 7.0%, offsetting some of the increases from other categories. Reductions in post-acute care spending were most likely related to reductions in hospital admissions (see Section 2.4.1)—fewer admissions could lead to lower need for post-acute care or, independent of need, changes in SNF and home health use eligibility under Medicare rules.

Exhibit 2.8. During the MD TCOC period (2019-2022), the model increased most categories of non-hospital spending with substantial increases in Part B drugs and ambulatory surgical care spending



Notes: (1) The percentage under the x-axis labels indicates the portion of all non-hospital spending that falls into this category in Maryland during the MD TCOC period. (2) Individual categories sum to total non-hospital spending. (3) Total impacts during the MD TCOC period for all outcomes shown were statistically different from zero at a $p < 0.10$ threshold. (4) The Other category includes services covered under Medicare Part A (for example, hospice) and services covered under Part B (for example, Part B-covered home health, durable medical equipment, non-hospital outpatient facilities, ambulance services, and surgical and related procedural services not included in our measure of primary and specialty ambulatory care).

+ The model increased Other non-hospital spending during the MD TCOC period (1.8%) by less than it did at the end of the MDAPM period (4.3%), leading to an estimate that the additional impacts during the MD TCOC period lowered Other non-hospital spending (-2.5%).

2.3.2. Drivers

The model reduced total Medicare Part A and B spending by an average of 2.1% from 2019 to 2022 but by less in 2021 (1.5%) and much less in 2022 (0.2%). Here, we describe the factors that likely drove the overall effects from 2019 to 2022 and why the model reduced spending by less in 2021 and 2022.

2.3.2a. How the model reduced total Medicare FFS spending

The model reduced total Medicare Part A and B spending from 2019 to 2022 because it substantially reduced hospital spending (by $480 PBPY) by more than it increased non-hospital spending (by $188 PBPY). The model substantially reduced hospital spending through the confluence of three factors.

First, Maryland's unique all-payer rate-setting authority allows the Health Services Cost Review Commission (HSCRC) to set hospital global budgets. This ability to set hospital global budgets is a powerful tool for controlling total spending for two reasons: (1) HSCRC sets hospital budgets for nearly all hospitals in the state, and (2) hospital spending accounts for a little more than half of all Medicare spending in Maryland. Therefore, by setting hospital global budgets, HSCRC directly influences a large portion of total Medicare spending in Maryland.

Second, HSCRC aims to set the growth in hospital spending each year so that the state meets or exceeds savings targets in agreements with CMS. The state agreements establishing the MDAPM and the MD TCOC Model set clear savings targets (see Box 2.A), with consequences for not hitting them. HSCRC set hospital spending so that it grew more slowly from 2014 to 2019 in Maryland than in the nation, generating annual savings (as measured using methods set in the state agreements) that, by 2019, well exceeded the targets. And, because our comparison group for estimating impacts comprises 25% of the nation, this pattern also meant that hospital spending in Maryland grew less quickly than in the comparison group (Exhibit 2.9), generating

Box 2.A. Model savings requirements

During the MDAPM period (2014 to 2018)

- Cap all-payer per capita hospital growth at 3.58% annually, the historical average growth of the state's economy.
- Achieve annual Medicare *hospital* savings, starting at $49.5 million in 2015 and growing to $82.5 million in 2018 (calculated relative to national spending growth).
- Meet guardrail test: Medicare per beneficiary total cost of care for Maryland residents cannot exceed national spending growth by more than 1 percentage point in any year or by any amount for two years in a row.

During the MD TCOC Model period (2019 to 2026)

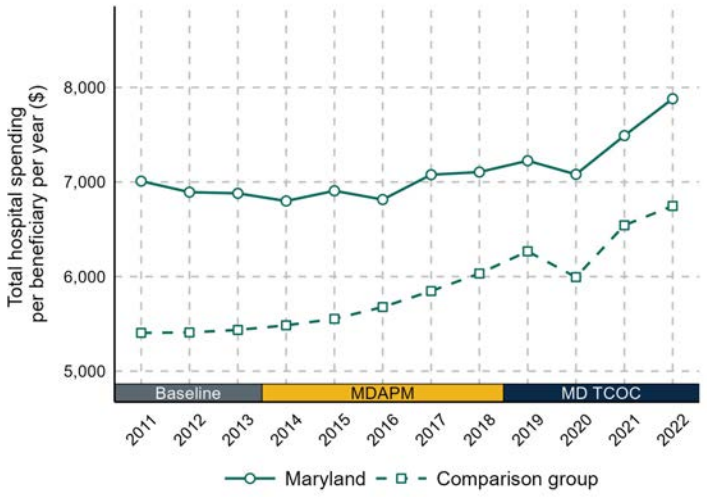
- As in the MDAPM period, cap all-payer per capita hospital growth at 3.58% annually.
- Achieve annual total Medicare Part A and B savings, starting at $120 million in 2019 and growing to $267 million in 2022 (calculated relative to national spending growth).
- Meet the same guardrail test as in the MDAPM period.

If the state fails to meet these requirements, CMS can remove the waiver authority that allows HSCRC to set prices that CMS pays for hospital care in the state. ◢

increasing hospital savings (measured using this evaluation's method for estimating impacts).[22] From 2020 to 2022, per capita hospital spending in Maryland grew about as quickly or faster than it did the comparison group, but not fast enough to erase all gains through 2019.[23] As a result, the model continued to generate hospital savings from 2020 through 2022, but those savings were about the same or smaller than they were in 2019.

Third, HSCRC moderated hospital spending growth in part to meet its founding goals. According to the statute that created HSCRC, the agency is authorized to establish hospital rates that promote cost containment, access to care, equity, financial stability, and hospital accountability. So, the CMS goal to constrain Medicare and all-payer hospital spending growth generally aligned with the state's goal to contain cost growth. At the same time, HSCRC needed to balance that goal with ensuring hospital financial stability by providing adequate rate updates each year (see Box 2.B).

Exhibit 2.9. Hospital spending in Maryland has grown slower than in the comparison group in most years under the model



Note: The lines represent unadjusted weighted (by observability and matching weights) means for hospital spending in Maryland and the comparison group over time.

[22] The methods that CMS uses to calculate Medicare savings per the terms of the state agreement establishing the MD TCOC Model differ from those we use for estimating model effects. Based on rules described in the state agreement, CMS calculates savings by comparing the growth in actual spending in Maryland with what the growth in spending would have been if Maryland per-capita spending had grown at the national rate. By contrast, in the evaluation, we use a matched comparison group and a difference-in-differences model to estimate the effects of the Maryland model. Although different conceptually, results from the two ways of estimating savings are broadly similar, driven mainly by the fact that the comparison group comprises one-quarter of the nation.

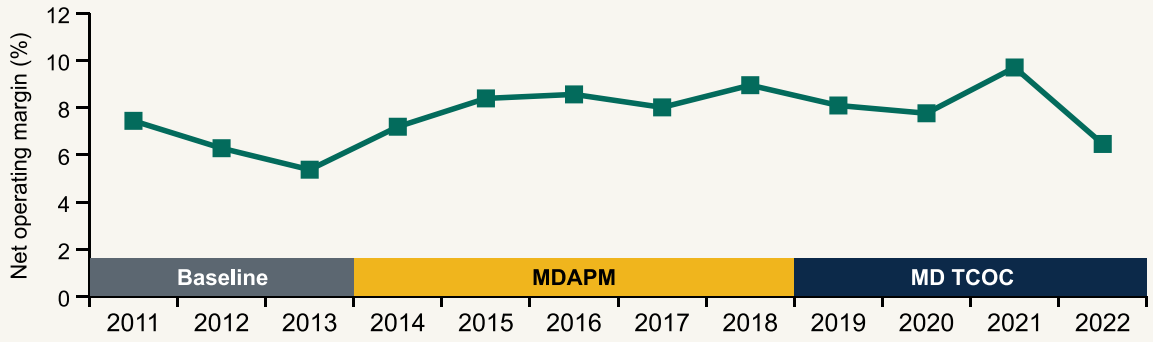
[23] In 2020, hospital spending in both Maryland and the comparison group declined due to drops in hospital use during the early phase of the COVID-19 pandemic.

Box 2.B. Hospital financial stability in the model

Hospital margins in Maryland from 2014 to 2022 were generally at or above the levels observed before the model's implementation. This pattern suggests that most hospitals appear to be financially stable. Hospitals were able to stay financially stable, in part, by reducing volume, which lowered their operating costs while their revenues remained fixed.

Margins were notably lower in 2022 than in prior years. And, in site visits and in our survey, hospital respondents offered mixed perspectives on their ability to maintain financial viability under the model. In the survey, around half of hospitals agreed or strongly agreed they could operate in a financially viable way under the model. Yet 39% of hospitals disagreed or strongly disagreed with this sentiment, citing concerns with high inflation and the ongoing impact of the COVID-19 pandemic on hiring and retaining staff.

Exhibit 2.10. Hospital net operating margins in Maryland have remained roughly steady over the course of the model



Source: HSCRC's Hospital Financial Condition Report, which is available at https://hscrc.maryland.gov/Pages/pdr-annual-reports.aspx.

Notes: (1) Net operating margins is equal to net operating revenue minus total operating expenses divided by net operating revenue. (2) Both revenue and expenses are for regulated services. Regulated services include inpatient, hospital-based outpatient, and emergency services (but excludes physician services).

2.3.2b. How the model increased non-hospital spending

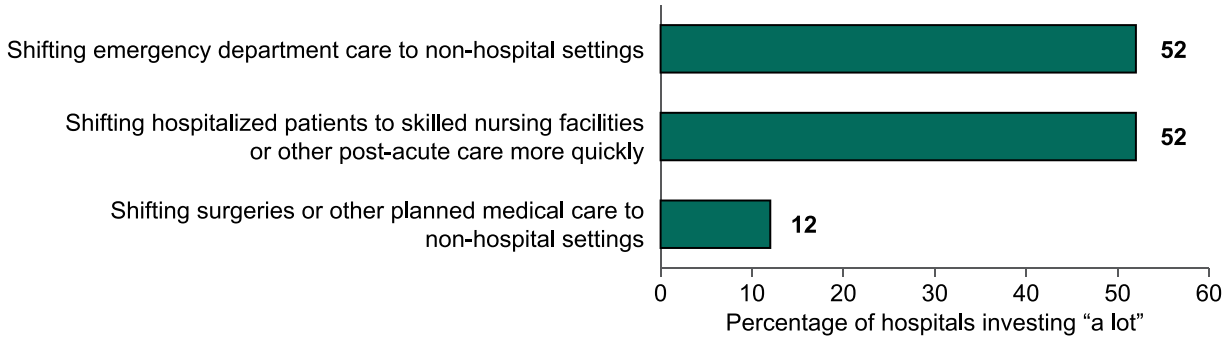
The model increased non-hospital spending largely because the hospital global budget incentive encouraged hospitals, or their health systems, to shift care outside the hospital. Unlike hospital spending, the state cannot directly control non-hospital spending. As a result, during the MD TCOC period, the model added several design elements to limit the growth in total cost of care and help the state meet its Medicare savings requirements (see Chapter 1). Yet the model continued to increase non-hospital spending during the MD TCOC period, suggesting that these new model elements were not able to meaningfully curb growth in non-hospital spending. Indeed, with the notable exception of 2020, and to a lesser extent 2019, the model has consistently increased non-hospital spending by growing amounts from 2014 to 2022.

Hospital global budgets create a strong incentive to shift care outside the hospital.

When a hospital shifts care to a non-hospital setting, it reduces its operating costs but retains much or all of its budget. Hospitals or health systems that can provide the same service in a system-owned non-hospital setting (for example, in a system-owned ambulatory surgical center) are further incentivized to shift the care because they could boost the system's FFS revenue. Hospitals should report to HSCRC when services have shifted to other sites, and HSCRC monitors for such shifts as well. When identified, HSCRC will reduce a hospital's budget by 50% for those services, allowing the hospital to retain the other 50% as continued incentive to move care to lower-cost settings.[24] However, the total dollar amount removed from hospital budgets through this mechanism to date has been limited ($114 million statewide since the beginning of the MDAPM period, representing about 11% of the increase in non-hospital spending due to the model over the same time period).

In our survey, nearly all hospitals reported that they were investing "a lot" of (48%) or "some" (48%) staff, infrastructure, or other resources toward shifting care to lower-acuity settings. About half of these hospitals were focused on shifting ED care to non-hospital settings and shifting hospitalized patients to skilled nursing facilities or other post-acute care more quickly (Exhibit 2.11). A lesser share of hospitals (12%) focused on shifting surgeries or other planned medical care to non-hospital settings (Exhibit 2.11). In interviews, we asked for examples of how these strategies were implemented at individual hospitals.

Exhibit 2.11. Hospitals reported shifting care to lower-acuity settings via a variety of approaches



Source: Mathematica's analysis of data from our hospital survey.

Note: (1) N = 42 hospitals (out of 44). (2) The survey question was, "How much of an investment is your hospital currently making in each of the following approaches to shift care to lower-acuity settings when appropriate?" (3) Hospitals could select "a lot," "some," "a little," or "none" and were told in the survey instrument that "investment refers to contributions of staff, infrastructure, or other resources by your hospital." (4) This question was fielded to hospitals that responded they were investing "a lot" or "some" to shifting care to lower-acuity settings in a prior question (question B1.b).

[24] HSCRC generally does not reduce a hospital's budget for shifting care from the ED to primary care or urgent care settings because they want to further incentivize that behavior (HSCRC n.d.)

- **Shifting ED care to non-hospital settings.** All hospitals we interviewed had one or more investments in alternatives to the ED, including opening urgent care centers and partnerships with other providers that might better serve common needs found in the ED, such as behavioral health needs in crisis centers and dental needs in Federally Qualified Health Centers. These alternatives sometimes still required triage in the ED but often also allowed direct patient access to alternative sites of care. For example, one hospital described opening an urgent care center across the street from their ED and sending patients who arrive at the ED with low-acuity issues over to that center. Many urgent care centers provide after-hours care. Several hospitals also described embedding care managers in the ED to identify appropriate alternative sites of care, such as nursing facilities, hospices, or connecting patients with community resources to avoid admitting patients to the hospital if those patients could be served in a lower-acuity setting. Systems also invested in 24-hour call-lines for their primary care patients so nurses could triage them to urgent care or a next-day primary care visit instead of the ED, when appropriate.
- **Shifting hospitalized patients to skilled nursing facilities or other post-acute care more quickly.** Most hospitals we interviewed were focused on reducing their length of stay and saw it as a key measure for how their hospital was performing. One hospital noted that length of stay was a metric with a goal that must be met by their hospitalist group for them to receive their full incentive payment. Hospitals organized discharge planning efforts to help minimize length of stay. Different examples included the following: (1) the care team discussing from the beginning of the admission what is likely the most appropriate next level of care for a patient and beginning the process for any authorizations or follow-up care as early as possible, (2) an emphasis on identifying tests and imaging that can be done as outpatient services to avoid delays in discharge, (3) a daily virtual meeting with hospital leaders during which unit directors bring information from each unit's morning rounds to discuss patients close to discharge and identify resources and overcome delays in discharge. Hospitals also described partnerships with post-acute care partners to reduce hospital length of stay. Many hospitals began regular calls with post-acute care partners so they knew about bed availability and other issues that could affect a smooth transition. Another hospital was contracting with an assisted living placement program to help find a place for patients who do not need to be in the hospital any longer but can't be discharged home.
- **Shifting surgeries or other planned medical care to non-hospital settings.** In interviews, several hospitals discussed shifting hospital care to dialysis clinics, outpatient clinics for chemotherapy, and ambulatory surgical centers. For example, one hospital described a recent effort to purchase a stake in an ambulatory surgical center and shift certain surgeries there, and another hospital described closing an outpatient infusion center in the hospital to provide that care in a lower-acuity setting. Indeed, the model increased non-hospital spending for a wide variety of non-hospital spending categories, including Part B drugs (which covers some chemotherapy drugs), ambulatory surgical center spending, and primary and specialty services.

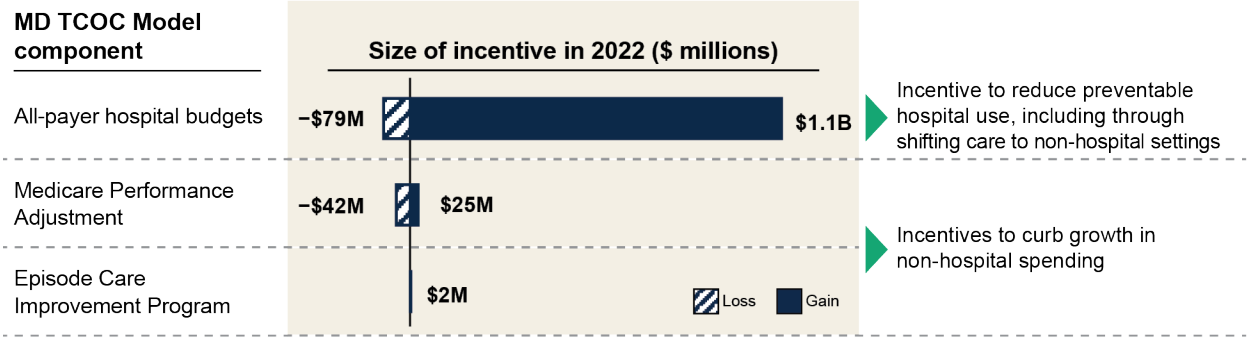
New MD TCOC Model incentives did not meaningfully curb growth in non-hospital spending.

Three new model incentives were added during the MD TCOC period to limit the growth in total cost of care and help the state meet its Medicare savings requirements. These included (1) the Medicare Performance Adjustment, used to encourage hospitals to limit total cost of care growth by adjusting each hospital's budget based on the total cost of care performance of its attributed Medicare FFS beneficiaries; (2) episode payment programs to encourage hospitals and their partners to reduce total cost of care for specific episodes of care; and (3) MDPCP, which included a requirement that practices coordinate with specialists, which could reduce duplicative testing and imaging.

During the MD TCOC period, the model continued to increase non-hospital spending suggesting that these new model incentives did not meaningfully curb growth in non-hospital spending. This was further supported by our hospital survey findings where less than 10% of hospitals reported that the Medicare Performance Adjustment or the episode programs encouraged them to limit growth in non-hospital spending "a lot." The following three reasons could help explain why new model incentives for hospitals did not curb the growth in non-hospital spending during the MD TCOC period.

First, new model incentives designed to curb growth in non-hospital spending were relatively small, especially in contrast to global budgets, which provides a large incentive to shift care outside of the hospital (Exhibit 2.12). This was especially true during our study period, which predates payments for Care Transformation Initiatives (CTIs).

Exhibit 2.12 New MD TCOC Model incentives designed to curb growth in non-hospital spending were small in contrast to the global budget incentive in 2022



Notes: (1) The all-payer hospital global budget incentive is calculated as the difference between the revenue hospitals received under global budgets and the revenue they would have received for the same volume under a fee-for-service schedule. (2) The Medicare Performance Adjustment is to hospital budgets based on each hospital's performance on total cost of care for Medicare FFS beneficiaries, (3) Episode Care Improvement Program incentive is the amount hospitals received for reducing Medicare episode costs while meeting quality targets.

Second, CTIs, the most popular episode-based program, included design elements that might have weakened their effectiveness in encouraging efforts to limit growth in non-hospital spending. Although the program may prompt more changes once hospitals start receiving payment adjustments, early experience with CTIs from 2022 indicate the following limitations:

- For many CTIs, hospitals were allowed to select the baseline period that defines the target price used for assessing the effectiveness of their CTI, and they often selected base periods well before the MD TCOC Model began. This allowed hospitals to earn payments for existing improvements rather than initiating new efforts, which limits CTIs' ability to drive impacts. During interviews, no hospitals reported initiating new care changes because of the episode program.
- Episode costs are calculated based on standardized hospital spending, meaning hospitals could do well under CTIs simply by reducing preventable hospital use, even if they did not limit growth in non-hospital spending. In our survey, half of hospitals participating in CTIs reported it was very important to them that the interventions they deliver under CTIs help them perform well under global budgets.
- The way incentive payments are determined discouraged some hospitals from investing new resources into care changes. Specifically, even if a hospital succeeded in reducing episode spending relative to benchmarks, they could still end up owing money because their performance was relative to other hospital participants.

Third, hospitals reported challenges influencing their performance on the Medicare Performance Adjustment. In interviews, hospitals noted it was difficult to be responsible for the total cost of care for all patients in their service area when most patients do not require a hospitalization during the year, and those that do often have a choice about where they go.[25] In our survey, 67% of hospitals reported it was a difficult to reduce non-hospital spending for patients with whom they rarely or never interacted. Further, hospitals noted it is challenging to constrain non-hospital spending because providers are generally paid FFS, which incentivizes them to increase the volume of services provide.

In addition, as we report in Chapter 5, we did not find an added effect of MDPCP in terms of reducing non-hospital spending. MDPCP practices generally did not prioritize MDPCP requirements that logically could have reduced non-hospital spending. For example, CMS encouraged practices participating in MDPCP to review the data on high-cost and high-volume specialists and use the data to guide referrals as part of the MDPCP requirement for practices to ensure coordinated referral management for patients seeking care from such specialists. Practices

[25] The MD TCOC state agreement requires that Maryland attribute at least 95% of Medicare FFS beneficiaries in the state to one or more hospitals for the Medicare Performance Adjustment. HSCRC has, over time, revised their specific process for attributing Medicare beneficiaries to hospitals. In 2022, HSCRC attributed beneficiaries to hospitals based on whether the beneficiaries lived within a hospital's service area, with some modifications for academic medical centers (HSCRC 2021c). In 2022, 13% of Medicare beneficiaries in Maryland had a hospital admission.

we interviewed, however, rarely reported focusing on reducing referrals to high-volume or high-cost specialists.

2.3.2c. Why the model reduced total spending less in 2021 and 2022 than it did in 2019 and 2020

The model reduced total Medicare spending substantially less in 2021 and 2022 than it did in 2019 and 2020. This occurred because the model continued to increase non-hospital spending (Exhibit 2.7) but did not generate sufficient hospital savings to offset those increases (Exhibit 2.6).

Several factors likely explain why the model did not generate larger hospital savings after 2019. First, the revenue protection provided by global budgets during the COVID-19 pandemic allowed hospitals in Maryland to receive their full global budgets (or close to them) in 2020 and 2021.[26] Hospitals considered this a strength of global budgets—that it provided financial stability and predictability through the COVID-19 pandemic. Indeed, hospital margins in Maryland were higher in 2021 than they were in earlier years. Yet the revenue protections from global budgets also curbed savings in hospital spending because hospital revenue dropped substantially nationally and in the comparison group as volumes declined.

Second, HSCRC set hospital budgets to grow such that they would maintain but not necessarily increase their savings. In theory, HSCRC could do this and still meet the savings requirements because they had acted more conservatively in prior years and therefore banked enough savings according to the calculations spelled out in the MD TCOC agreement. HSCRC wanted to pursue this approach because hospitals were experiencing high inflation and staffing issues related to the COVID-19 pandemic, requiring them to pay a premium for their workforce (HSCRC 2023a).

Third, in 2022, CMS actuaries projected higher national Medicare Part A and B spending growth than what was observed nationally, mainly because the rebound in spending after the COVID-19 pandemic was smaller than anticipated. HSCRC used this actuarial projection as a factor in determining hospital global budgets for the year.[27] In other words, HSCRC set hospital budget growth so that its estimate of total Medicare spending growth in Maryland would match projected national spending growth, which would allow the state to maintain (or slightly grow) Medicare savings. However, because hospital spending growth in Maryland ended up being higher than the actual growth nationally, and in the comparison group, the model generated smaller hospital savings in 2022 than it did in earlier years. Had actuarial projections been more in line with actual spending growth in 2022, HSCRC may have set lower growth in hospital

[26] Due to constraints on allowed price increases, some hospitals could not increase their prices enough in 2020 when volumes declined to still receive their full budget for the year. HSCRC allowed these hospitals to continue to charge higher prices in 2021 and 2022, if needed, to recover their full 2020 budget, after accounting for federal Provider Relief Funds that hospitals received.

[27] Historically, HSCRC averaged prior years trends to estimate national spending growth. However, due to the COVID-19 pandemic and the volatility of health care service use, they favored CMS projections during this time. The inherent uncertainty in projecting national Medicare spending growth creates a challenge for setting hospital global budgets.

budgets. HSCRC reported that it was not possible to adjust rates quickly enough to respond to actual national spending during the calendar year because of the lag in data on claims and expenditures.

Total Medicare savings were reduced further after accounting for payments made to MDPCP practices

Maryland also had higher non-claims payments relative to the comparison group in 2021, the most recent year for which we have data ($258 versus $124 per beneficiary per year). These are payments CMS made to providers for participating in alternative payment models such as MDPCP that do not appear in the Medicare claims. The higher non-claims payments in Maryland were mainly because of MDPCP, which has a wider reach within the state than its national counterparts Comprehensive Primary Care Plus and Primary Care First in their respective service areas. Medicare's investment in MDPCP went up from $62 million in 2019 to $172 million in 2021 for three reasons: (1) more practices joined MDPCP; (2) participating practices had more patients attributed to them over time; and (3) practices moved from Track 1 to Track 2, which is associated with higher care management fees. In 2021, the impact of these non-claims payments on total savings was substantial; estimated total Medicare savings was $210 PBPY before accounting for non-claims payments and just $75 PBPY after accounting for these payments. Because MDPCP did not significantly reduce total spending (see Chapter 5), a sustained or growing investment in the program could strain the model's ability to generate new total Medicare savings.

The model's ability to course correct could lead to more savings in 2023 and beyond

The state narrowly met it savings target in 2022 and failed one of the guardrail tests,[28] but HSCRC has several tools at its disposal to course correct for 2023 and future years. In 2023, CMS and Maryland implemented several changes to increase savings to Medicare (see Box 2.C). In addition to adjusting rates for all payers or increasing the public–private rate differential, HSCRC is using the Medicare Performance Adjustment Savings Component tool for the first time. This tool provides a direct budgetary adjustment to generate savings to Medicare.

Box 2.C. The model will feature several changes in 2023 to increase savings to Medicare, including the following:

- Lower Medicare prices via the Medicare Performance Adjustment Savings Component (~ $64 million in savings to Medicare).
- Reduce public payer rates and increase commercial rates for much of 2023 and all of 2024 (~ $26 million in savings to Medicare).
- Reduce all-payer rates via an off-cycle reduction in the update factor (~ $14 million in savings to Medicare). ◢

[28] In 2022, CMS calculated the annual Medicare total cost of care savings to be $269.1 million, which was just above the savings requirements of $267 million. However, total cost of care spending growth exceeded national Medicare spending growth two years in a row (0.9 percentage points above national growth in 2022 and 0.6 percentage points above in 2021), which meant the state failed one of the guardrail tests specified in the state agreement.

Specifically, it allows HSCRC to reduce the amount that Medicare specifically pays for hospital care, rather than the amounts all payers pay for hospital care. Although the tool risks undermining the all-payer rate-setting system in Maryland to some degree, limited use of the Medicare Performance Adjustment for this purpose could allow the state to meet its savings commitment to CMS and only modestly affect the total amount that hospitals receive in funding.

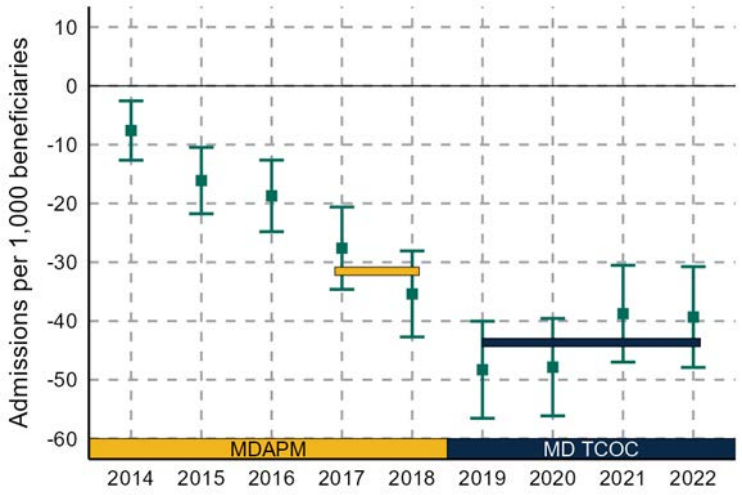
2.4. Model effects on service use and quality of care and their possible drivers

2.4.1. Effects

2.4.1a. All-cause acute care hospital admissions

- In the first four years of MD TCOC, the model reduced hospital admissions by an average of 43.7 admissions per 1,000 beneficiaries or 16.2% (90% CI: 51.8, 35.5) (Exhibit 2.13).
- On average, the reduction in admissions during MD TCOC were larger than the reductions seen at the end of MDAPM by about 5.6 percentage points.
- Similar to hospital spending, the model's effects on hospital admissions have been slightly less favorable in 2021 and 2022 relative to 2019 and 2020.

Exhibit 2.13. The model substantially reduced hospital admissions during the MD TCOC period, with slightly less favorable effects in 2021 and 2022 than in 2019 and 2020



	Estimated impact	
	# of admissions per 1,000 beneficiaries per year	Percentage[b]
Average at the end of MDAPM period (2017 and 2018)	**-31.5** (-38.5, -24.6)**	**-10.6%**
Average during the MD TCOC period (2019 to 2022)	**-43.7** (-51.8, -35.5)**	**-16.2%**
Difference[a]	-12.1** (-15.8, -8.4)	-5.6pp

Notes: (1) Green squares represent the impact estimates each year from 2014 to 2022, with error bars representing the 90% confidence interval. Horizonal yellow and blue bars represent the average yearly impact during the last two years of MDAPM and the full MD TCOC period, respectively. (2) Estimates in which the intervals do not span zero are statistically different from zero at a $p < 0.10$ threshold.

[a] This is the percentage impact in 2019 to 2022 minus the percentage impact in 2017 and 2018.

[b] This is the impact estimate divided by the unadjusted Maryland mean minus the impact estimate.

* $p < 0.10$; ** $p < 0.05$.

pp= percentage point.

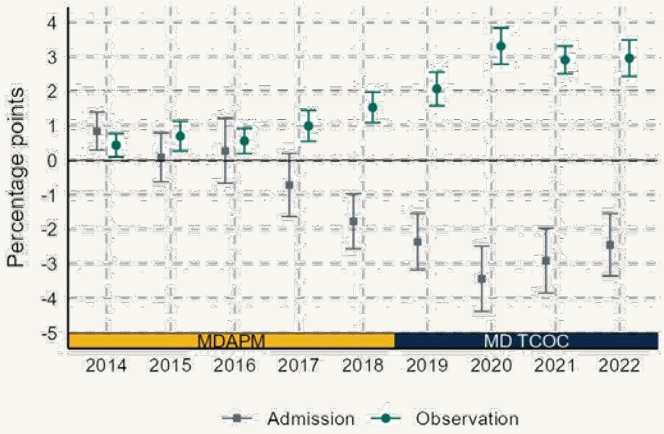
Box 2.D. Substituting observation stays for admissions likely explains some of the decline in admissions

Hospitals use observation stays as an alternative to inpatient admissions when the patient requires extra monitoring, but the hospital care team has not yet decided to admit them. According to CMS, observation stays should generally not exceed 24 hours (CMS 2023a) though there is evidence that some hospitals have many observation stays much longer than a day (Sheehy et al. 2013). Observation stays typically do not count as admissions in quality metrics such as potentially preventable admissions or unplanned readmissions, and recent evidence has found that increases in observation stays can explain more than half of apparent gains from national readmissions programs (Sabbatini et al. 2022). Observation stays may also increase patients' financial burden because of increased cost sharing (Kangovi et al. 2015).

In Maryland, hospitals could have strong incentives to send patients to observation rather than admit them. Observation stays are typically less costly for the hospital, and so, operating within a fixed budget, Maryland hospitals might prefer observation. To test whether the model increased the likelihood of being sent to observation, we estimated impacts for patients presenting in the ED on the probability of being (1) admitted, (2) sent to observation, or (3) discharged to the community.

- During the MD TCOC period, the model might have increased the likelihood of being sent to observation from the ED by about 2.8 percentage points.
- At the same time, the model might have decreased the likelihood of being admitted by the same amount (2.8 percentage points) (with no effect on being discharged to the community [not shown]).
- The increase in observation stays suggests that up to 38% of the model's effect on total admissions could be explained by shifting beneficiaries from an admission to observation (see Appendix B.1.10).
- We interpret these results with caution because we observed diverging baseline trends between Maryland and the comparison group (visual and statistical), weakening the credibility of the assumption needed to identify impacts of the model. Before the model, observation use was increasing in both Maryland and the comparison group but did so faster in Maryland (see Appendix B.1.10). This suggests that some or all of the effects on the probability of being sent to observation could be explained by factors predating the model and not the model itself, such as hospitals using observation stays more to avoid risk of CMS auditing for using short (one-day) inpatient admissions inappropriately. ◢

Exhibit 2.14. The model might have reduced admissions by sending more beneficiaries to observation



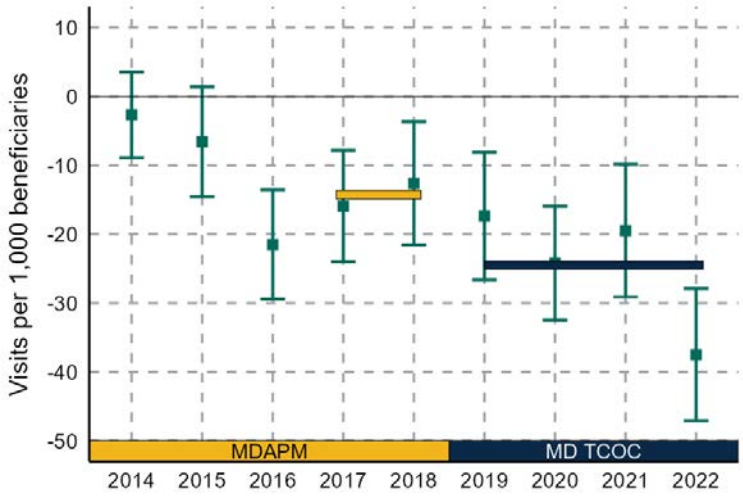
Notes: (1) Gray squares represent impact estimates of the effect on the probability of being admitted after ED discharge. Green circles represent impact estimates of the effect on the probability of being sent to observation after ED discharge. (2) Error bars represent the 90% confidence interval. Estimates in which the intervals do not span zero are statistically different from zero at a $p < 0.10$ threshold.

ED = emergency department

2.4.1b. Outpatient ED visits and observation stays

- The model reduced outpatient ED visits and observation stays by an average of 24.5 visits per 1,000 beneficiaries or 5.9% (90% CI: 32.9, 16.1) during the first four years of MD TCOC (Exhibit 2.15).[29] Because we observed the model increased observation stays (see Box 2.D), model effects on outpatient ED visits not including observations stays (not estimated in this report) were likely larger than effects that include observation stays.
- Reductions in ED visits and observation stays were larger than they were at the end of MDAPM by about 3.1 percentage points.
- In 2022, the model reduced ED visits and observation stays substantially more than it did through the first three years of the MD TCOC period (9.0%).

Exhibit 2.15. The model reduced outpatient ED visits and observation stays during the MD TCOC period, with substantial reductions in 2022



	Estimated impact	
	# of visits per 1,000 beneficiaries per year	Percentage[b]
Average at the end of MDAPM period (2017 and 2018)	**-14.3** (-22.5, -6.1)**	**-2.8%**
Average during the MD TCOC period (2019 to 2022)	**-24.5** (-32.9, -16.1)**	**-5.9%**
Difference[a]	-10.2** (-16.1, -4.4)	-3.1pp

Notes: (1) Green squares represent the impact estimates each year from 2014 to 2022, with error bars representing the 90% confidence interval. Horizonal yellow and blue bars represent the average yearly impact during the last two years of MDAPM and the full MD TCOC period, respectively. (2) Estimates in which the intervals do not span zero are statistically different from zero at a $p < 0.10$ threshold.

[a] This is the percentage impact in 2019 to 2022 minus the percentage impact in 2017 and 2018.

[b] This is the impact estimate divided by the unadjusted Maryland mean minus the impact estimate.

* $p < 0.10$; **$p < 0.05$.

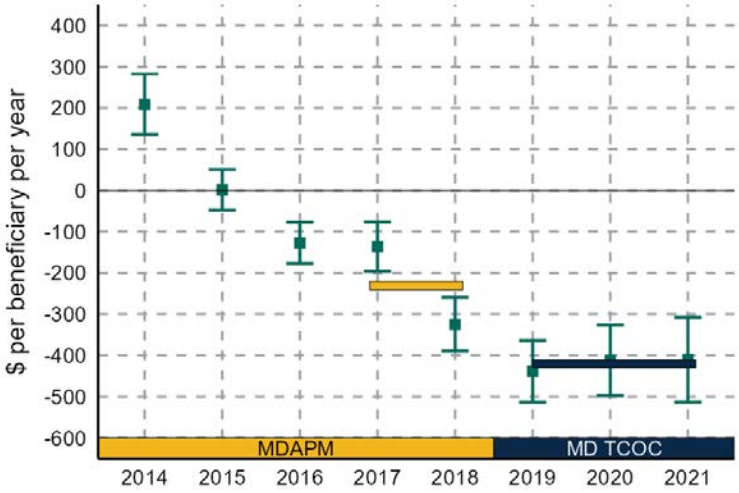
pp = percentage point.

[29] Outpatient ED visits and observation stays includes all visits to the ED that did not result in an inpatient admission plus all identified observation stays (including those that did not come through the ED).

2.4.1c. Intensity of hospital care (measured by standardized hospital spending)

- Standardized hospital spending is an aggregate measure of the intensity of hospital care. It includes spending for inpatient and outpatient care but removes differences in spending across hospitals for reasons other than utilization (for example, the differences in prices set by HSCRC and those set by the Inpatient Prospective Payment System/Outpatient Prospective Payment System). Because of data availability, we only have standardized spending results through 2021 for this report.
- On average, during the first three years of MD TCOC, the model reduced standardized hospital spending by about $420 PBPY or 8.0% (90% CI: $502, $339) (Exhibit 2.16).
- Reductions in standardized hospital spending were larger during the MD TCOC period than they were at the end of the MDAPM period by about 3.4 percentage points, though effects have been similar in all three MD TCOC period years (2019 to 2021).

Exhibit 2.16. The model reduced the intensity of hospital care during the first three years of the MD TCOC period, with similar effects in all three years



	Estimated impact	
	$ per beneficiary per year	Percentage[b]
Average at the end of MDAPM period (2017 and 2018)	**-$231** (-$290, -$172)**	**-4.6%**
Average during the MD TCOC period (2019 to 2022)	**-$420** (-$502, -$339)**	**-8.0%**
Difference[a]	-$189** (-$241, -$138)	-3.4pp

Notes: (1) Data on standardized hospital spending was only available through 2021 for this report. (2) Green squares represent the impact estimates each year from 2014 to 2022, with error bars representing the 90% confidence interval. Horizonal yellow and blue bars represent the average yearly impact during the last two years of MDAPM and the full MD TCOC period, respectively. (3) Estimates in which the intervals do not span zero are statistically different from zero at a $p < 0.10$ threshold.

[a] This is the percentage impact in 2019 to 2022 minus the percentage impact in 2017 and 2018.

[b] This is the impact estimate divided by the unadjusted Maryland mean minus the impact estimate.

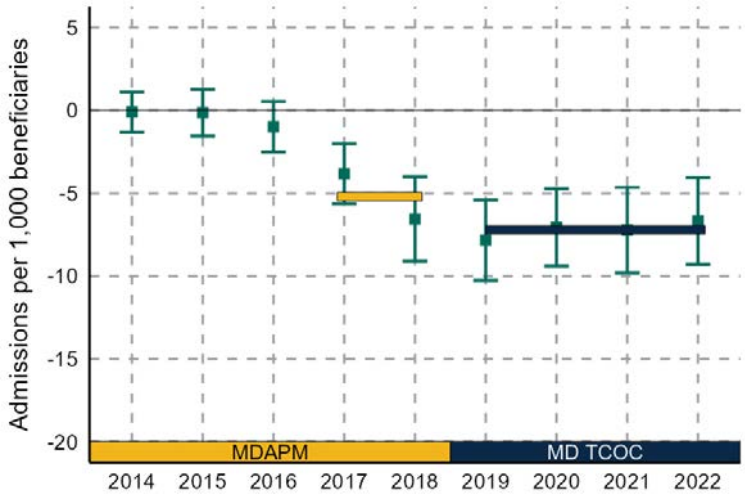
* $p < 0.10$; ** $p < 0.05$.

pp = percentage point.

2.4.1d. Potentially preventable admissions

- During the MD TCOC period, the model reduced potentially preventable admissions by about 7.2 admissions per 1,000 beneficiaries or 16.8% (90% CI: 9.6, 4.8) (Exhibit 2.17).
- The reduction in potentially preventable admissions during the MD TCOC period was about 6.9 percentage points larger than it was at the end of the MDAPM period.
- Since 2019, the model has maintained improvements on but not further reduced potentially preventable admissions.

Exhibit 2.17. The model substantially reduced potentially preventable admissions, though effects have been similar since the start of the MD TCOC period



	Estimated impact	
	# of admissions per 1,000 beneficiaries per year	Percentage[b]
Average at the end of MDAPM period (2017 and 2018)	**-5.2** (-7.3, -3.1)**	**-9.9%**
Average during the MD TCOC period (2019 to 2022)	**-7.2** (-9.6, -4.8)**	**-16.8%**
Difference[a]	-2.0** (-3.0, -1.0)	-6.9pp

Notes: (1) Green squares represent the impact estimates each year from 2014 to 2022, with error bars representing the 90% confidence interval. Horizonal yellow and blue bars represent the average yearly impact during the last two years of MDAPM and the full MD TCOC period, respectively. (2) Estimates in which the intervals do not span zero are statistically different from zero at a $p < 0.10$ threshold.

[a] This is the percentage impact in 2019 to 2022 minus the percentage impact in 2017 and 2018.

[b] This is the impact estimate divided by the unadjusted Maryland mean minus the impact estimate.

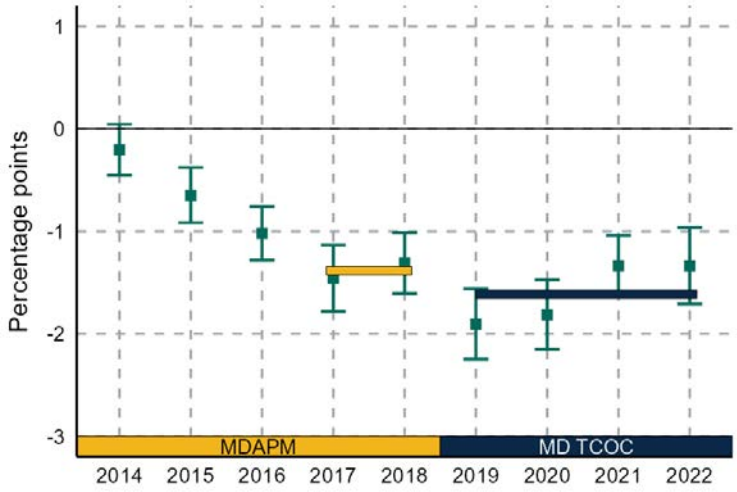
* $p < 0.10$; ** $p < 0.05$.

pp = percentage point.

2.4.1e. 30-day post-discharge unplanned readmissions

- Over the first four years of the MD TCOC period, the model reduced the probability of 30-day unplanned readmissions by 1.6 percentage points or 8.9% (90% CI 1.9, 1.3) (Exhibit 2.18).
- Reductions in the probability of readmission during the MD TCOC period were slightly larger than reductions seen at the end of MDAPM (0.2pp).
- The last two years of the MD TCOC period (2021 and 2022) show a change in the trend of increasing reductions in readmissions that began during the MDAPM period.

Exhibit 2.18. The model reduced unplanned readmissions during the MD TCOC period, including new gains in 2019 and 2020, but effects in 2021 and 2022 were more similar to the effects achieved at the end of the MDAPM period



	Estimated impact	
	Percentage of discharges	Percentage[b]
Average at the end of MDAPM period (2017 and 2018)	**-1.4pp** (-1.7, -1.1)**	**-7.9%**
Average during the MD TCOC period (2019 and 2022)	**-1.6pp** (-1.9, -1.3)**	**-8.9%**
Difference[a]	-0.2pp* (-0.4, 0)	-1.0pp

Notes: (1) Green squares represent the impact estimates each year from 2014 to 2022, with error bars representing the 90% confidence interval. Horizonal yellow and blue bars represent the average yearly impact during the last two years of MDAPM and the full MD TCOC period, respectively. (2) Estimates in which the intervals do not span zero are statistically different from zero at a $p < 0.10$ threshold.

[a] This is the percentage impact in 2019 to 2022 minus the percentage impact in 2017 and 2018.

[b] This is the impact estimate divided by the unadjusted Maryland mean minus the impact estimate.

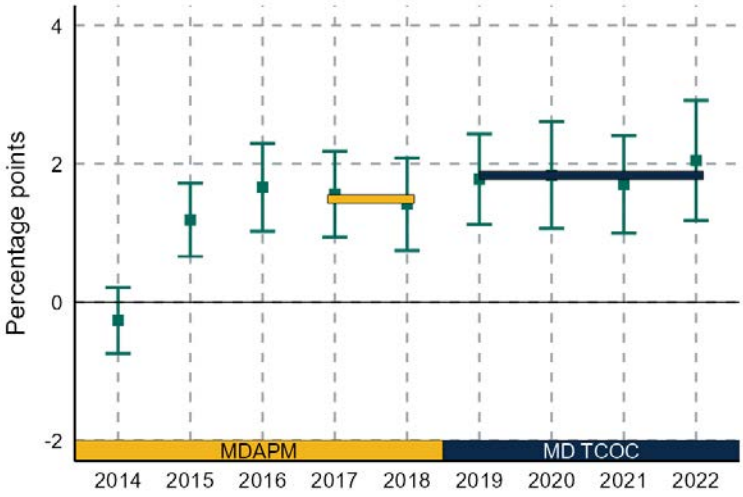
* $p < 0.10$; ** $p < 0.05$.

pp = percentage point.

2.4.1f. Timely follow-up after acute exacerbation of chronic conditions

- The model increased the probability of follow-up after acute exacerbation by 1.8 percentage points or 2.6% (90% CI: 1.2, 2.5) in the first four years of the MD TCOC period (Exhibit 2.19).
- Increases in the probability of follow-up after acute exacerbation during the MD TCOC period were about the same as they were at the end of the MDAPM period, and, in fact, estimates have remained similar since 2016, suggesting that the model has been able to maintain but not further improve on gains made early in the MDAPM period.

Exhibit 2.19. The model increased timely follow-up early in the MDAPM period and has maintained but not further improved these effects through 2022



	Estimated impact	
	Percentage of discharges	Percentage[b]
Average at the end of MDAPM period (2017 and 2018)	**1.5pp** (0.9, 2.1)**	**2.2%**
Average during the MD TCOC period (2019 to 2022)	**1.8pp** (1.2, 2.5)**	**2.6%**
Difference[a]	0.3pp (-0.1, 0.8)	0.4pp

Notes: (1) Green squares represent the impact estimates each year from 2014 to 2022, with error bars representing the 90% confidence interval. Horizonal yellow and blue bars represent the average yearly impact during the last two years of MDAPM and the full MD TCOC period, respectively. (2) Estimates in which the intervals do not span zero are statistically different from zero at a $p < 0.10$ threshold.

[a] This is the percentage impact in 2019 to 2022 minus the percentage impact in 2017 and 2018.

[b] This is the impact estimate divided by the unadjusted Maryland mean minus the impact estimate.

* $p < 0.10$; ** $p < 0.05$.

pp = percentage point.

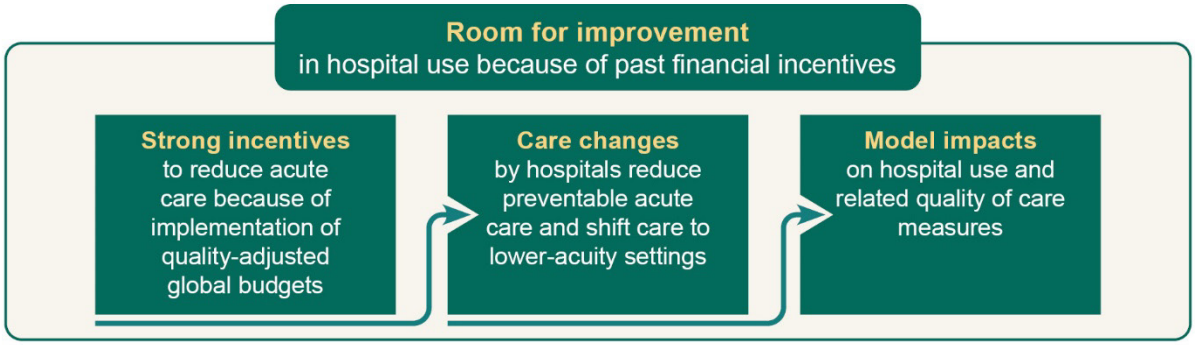
2.4.2. Drivers

The model reduced hospital use and improved several related quality measures substantially during the MD TCOC period. For most measures, however, the effects from 2020 to 2022 were similar to those in 2019, ending the trend observed from 2014 to 2019 of growing effects each year. In this section, we first describe how the model reduced hospital use and improved related quality measures from 2019 to 2022 and then describe why effects on many outcomes leveled off after 2019.

2.4.2a. How the model reduced hospital and ED use and improved related quality measures

When Maryland implemented global budgets at the start of the MDAPM, the state had substantial room for improvement on hospital use and quality measures based on hospital use. Global budgets, and the quality adjustments to them, provided a strong incentive for Maryland hospitals to implement care changes inside and outside the hospital to reduce preventable hospital use and shift care to lower-acuity settings. This led to growing model effects from 2014 to 2019, which the model then largely sustained (but did not increase further) from 2020 to 2022 (Exhibit 2.20).

Exhibit 2.20. Room for improvement, strong incentives, and care changes help explain model impacts



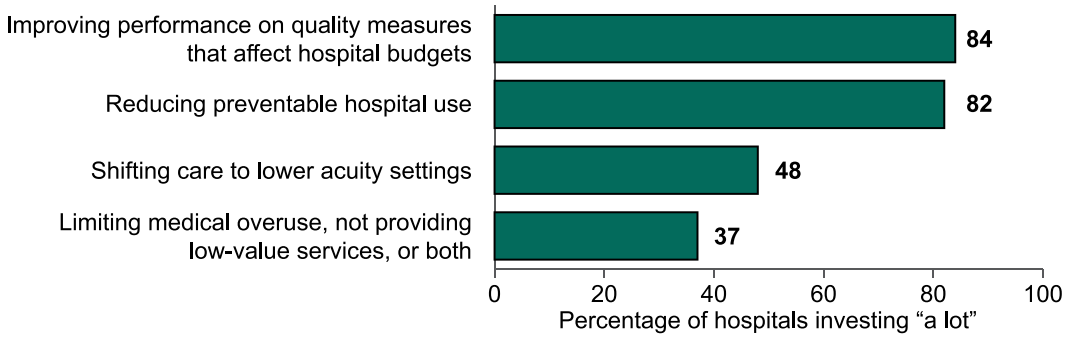
Room for improvement. At the beginning of the model, rates of hospital use were higher in Maryland than they were in much of the rest of the country, indicating substantial room for improvement. In particular, all-cause admission and 30-day unplanned readmission rates exceeded the 75th percentile across all states before the start of the MDAPM period (Machta et al. 2021). These high rates of hospital use were partly the consequence of Maryland's prior payment system. Beginning in 1977, CMS granted Maryland a waiver allowing the state to set Medicare prices as long as growth in Medicare spending per hospital stay did not surpass national growth rates. This regulatory approach effectively controlled the growth in spending per admission, but hospitals compensated for lower price increases by increasing the volume of hospital services (Murray and Berenson 2015). This room for improvement is essential context for model impacts for three reasons. First, it is part of why CMS and Maryland established the model in the first place. Second, it shaped the specific care changes that hospitals focused on, often working on areas where they identified more opportunity for improvement. Finally, it meant that when hospitals did make care changes, those could meaningfully affect outcomes.

Strong incentives. When HSCRC implemented quality-adjusted global budgets in 2014 at the start of the MDAPM, the budgets provided a strong incentive to reduce preventable hospital use. As described earlier, this incentive occurs because hospitals have fixed global budgets. So they can increase their net operating income by decreasing their volumes and consequently their operating expenses. Furthermore, the quality adjustments to the global budgets often strengthen the incentives to reduce preventable hospital use because several of the measures are based on hospital use (reducing potentially preventable admissions and 30-day unplanned readmissions) or

are directly related to how a hospital could reduce hospital use (timely follow-up, which could help reduce readmissions). Global budgets and the quality adjustments to them represent the largest incentives to hospitals by far, in terms of size, in 2022 (see Chapter 1). In addition, in our hospital survey, hospitals ranked global budgets, and quality adjustments to them, as the largest drivers of change since the 2019 implementation of the MD TCOC Model. Specifically, 74% of hospitals reported that global budgets and the quality adjustments to them had "a lot" of influence on their investments in care delivery changes.

Care changes. In the survey and in site visits, hospitals reported four main strategies for succeeding under global budgets: (1) improving performance on quality measures that affect hospital budgets; (2) reducing preventable hospital use; (3) shifting hospital or ED care to lower-acuity settings when appropriate; and (4) limiting medical overuse, not providing low-value services, or both (Exhibit 2.21). All four of these strategies could result in lowering hospital use, including reducing potentially preventable admissions and unplanned readmissions.

Exhibit 2.21. Hospitals reported four main strategies for succeeding under global budgets



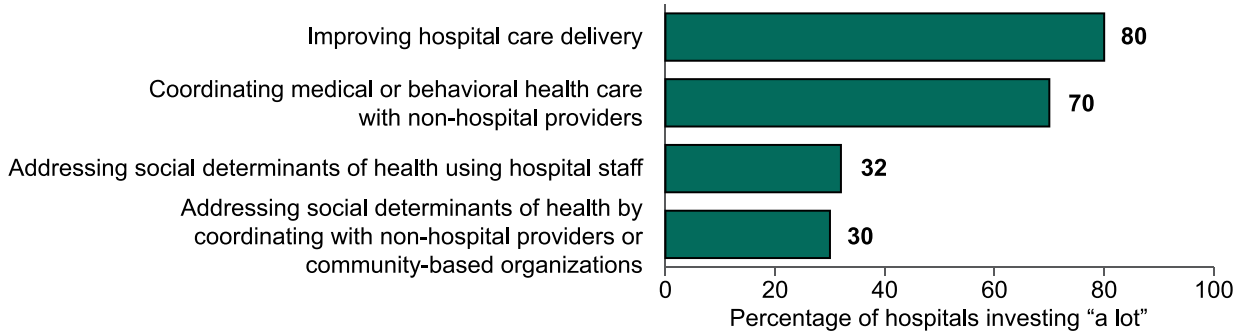
Source: Mathematica's analysis of data from our hospital survey.

Notes: (1) N = 44 hospitals. (2) The survey question was, "How much of an investment is your hospital currently making in each of the following strategies to do well financially under your global budget?" (3) Hospitals could select "a lot," "some," "a little," or "none" and were told in the survey instrument that "investment refers to contributions of staff, infrastructure, or other resources by your hospital."

Improving quality measures. Hospitals noted that it was important for them to perform well on quality programs to do well financially under the model. Some quality measures, such as hospital readmissions, complement the global budget incentive to reduce preventable hospital use, and we discuss hospitals' approaches to them below. Others, such as patient experience ratings, are designed in part to guard against unintended consequences of global budgets. Because global budgets provide a fixed amount regardless of the services rendered, the natural concern is that hospitals would provide fewer services, potentially affecting access, quality, or patients' experience of care (Berenson et al. 2016). One hospital described seeking win-win situations across quality programs and other model incentives. For example, this hospital concentrated on reducing hospital-acquired infections, which it believed contributed to improved performance on quality programs and the global budget incentive. Some hospital programs that reduced preventable acute care were designed with a specific focus on quality metrics. For example, one hospital included a checklist of issues tied to quality metrics, such as reducing the risk of infections, in its daily rounding described below.

Reducing preventable acute care. Hospitals were pursuing changes that reduce the need for acute care (hospital and ED) in the hospital, in coordination with non-hospital providers, and in the community. In our survey, all hospitals reported that they were investing "a lot" of (82%) or "some" (18%) staff, infrastructure, or other resources toward reducing preventable acute care. About 80% of hospitals reported working to improve hospital care delivery as a way to reduce preventable acute care, and 70% reported coordinating medical or behavioral health care with non-hospital providers to do so (Exhibit 2.22). In addition, about one-third of hospitals reported working to address social determinants of health using hospital staff or by coordination with non-hospital providers.

Exhibit 2.22. Hospitals invested in several approaches to reduce preventable hospital use



Source: Mathematica's analysis of data from our hospital survey.

Notes: (1) N = 44 hospitals. (2) The survey question was, "How much of an investment is your hospital currently making in each of the following strategies to reduce preventable hospital use. (3) Hospitals could select "a lot," "some," "a little," or "none" and were told in the survey instrument that "investment refers to contributions of staff, infrastructure, or other resources by your hospital."

In our site visits, we heard examples of specific changes hospitals were making to care delivery within each of the approaches (Exhibit 2.23).

Exhibit 2.23. Hospital approaches to reducing preventable acute care

Approach	Examples from hospital site visits
Improving hospital care delivery	• Implement enhanced discharge planning. These programs generally begin by identifying the target population and then including some or all of the following: transition planning, medication management, patient education, and a plan for follow-up care. • Conduct multidisciplinary rounds to align providers on discharge plans. During daily rounds, care providers such as physicians, nurses, pharmacists, and care managers meet to discuss the plan for the day and what they need to discharge each patient safely. • Schedule follow-up appointments before hospital discharge.
Coordinating medical or behavioral health care with non-hospital providers	• Partner with post-acute care providers to improve their quality and reduce risk of readmission. In some cases, hospitals provided medical staff to post-acute care facilities to ensure a smooth transition and improve care coordination or medical directors to provide administrative support. • Partner with primary care to promote advance directive, establish care plans, and encourage preventative care. • Provide care management to high-risk people after hospital discharge to, for example, ensure they have follow-up appointments and access to medications.

Approach	Examples from hospital site visits
Addressing social determinants	• Invest in community health workers or care managers to screen for and address health-related social needs. • Implement Diabetes Prevention Program to promote healthy lifestyle changes. • Screen for various health conditions in non-traditional settings, such as grocery stores and mobile health clinics. • Partner with community organizations to address health related social needs, such as housing with wraparound services.

Source: Data from hospital site visits

Shifting care to lower-acuity settings. Hospitals were also investing in alternatives to ED visits or admissions. These investments do not necessarily aim to reduce the overall need for care but instead try to provide care more efficiently (and generally outside of global budget revenues). In addition to the shifts in care that likely increase non-hospital spending described in Section 2.3.2b, several hospitals described partnerships with emergency medical services to reduce the number of transports to the hospital for emergency medical services for people who frequently use 911 services. Specifically, emergency medical services partner with health care providers to conduct home visits to assess, treat, and refer patients to needed services outside the emergency environment. Moreover, we know from our impact findings that as much as 38% of the impacts on admissions were through shifting patients to observation stays. Shifting care to observation stays might have several benefits to hospitals but could also introduce harm to patients (Exhibit 2.24)

Exhibit 2.24. Shifting care to observations stays might have several benefits to hospitals but could also introduce harm to patients

Hospital	Beneficiary
• Internal cost might be lower because of the intensity of services provided. • The stay would not be categorized as readmission, thereby not lowering performance on quality programs.	• Out-of-pocket costs might be higher because of differences in coverage, which can be more comprehensive for inpatient care. • Medicare may not cover the cost of a discharge to a skilled nursing facility because of the three-day rule

Limiting medical overuse, not providing low-value services, or both. In our survey, 43% of hospitals reported they were working to enhance palliative care options to limit intensive care at the end of life that does not meet patients' preferences. This was also commonly described in site visits, in which hospitals reported expanding hospice and palliative care teams to minimize acute care utilization at the end of life and sometimes partnering with hospice providers to offer that benefit. In addition, in the survey, 34% of hospitals reported that they were working with hospital-based providers to limit low-value services in the hospital. For example, during site visits, one hospital discussed efforts to use its electronic health record to standardize care so that it aligns with evidence-based care pathways to reduce the delivery of low-value or inappropriate care.

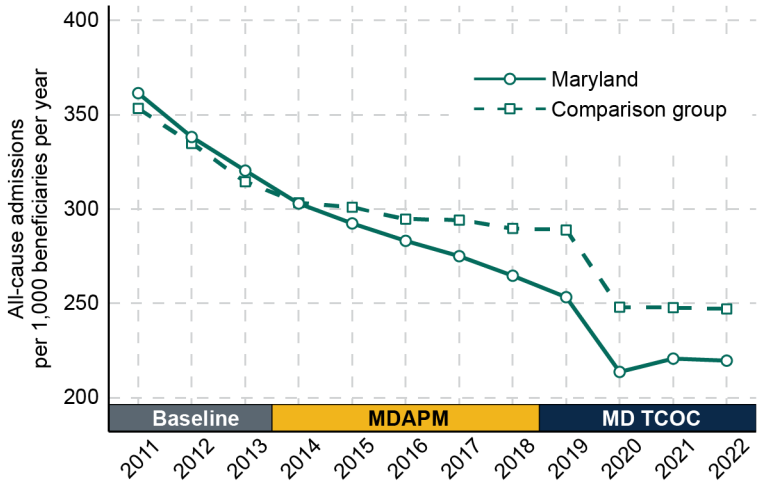
MDPCP likely also played a small but important role in contributing to the improvements observed in hospital use and related quality measures after 2019. As we describe in Chapter 5, we estimate MDPCP itself (on top of other model components) possibly reduced admissions by about 2.5% for beneficiaries going to MDPCP practices. This is likely attributable to

improvements in care management services for beneficiaries at high risk of hospitalization. Because MDPCP reaches about half of all Medicare beneficiaries in the state, this could reduce admissions statewide by about 1.5% from 2019 to 2022, which is almost one-third of the additional 5.6 percentage point reduction in admissions statewide during that period relative to the end of the MDAPM period.

2.4.2b. Why the model's effects on hospital use and related quality measures plateaued after 2019

The effects of the model on hospital use and related quality of care measures showed growth from 2014 to 2019 but largely plateaued thereafter—sustaining but not further increasing impacts. The plateauing of model effects on hospital use and quality of care measures starting in 2020 can largely be attributed to three factors:

Exhibit 2.25. All-cause admissions in Maryland and the comparison group fell in 2020, leaving less room for improvement



First, there was less room for improvement in service use measures. In our survey, 59% of hospital respondents reported that limited ongoing opportunities to reduce volume while maintaining high quality care is "somewhat" or "a great deal" of a barrier to succeeding under global budgets. This reduction in room for improvement is because of a combination of past model success and the COVID-19 pandemic (Exhibit 2.25). The model was clearly reducing hospital use before the COVID-19 pandemic because of model incentives and supports. In 2013, before the MDAPM began, Maryland ranked the 7th highest across all 50 states in Medicare per-capita admission rates. By 2018, the year before the MD TCOC period began, Maryland ranked 34th (Machta et al. 2021). During our hospital site visits, one interviewee commented that their hospital had already "wrung out a lot of potentially avoidable utilization." The limited room for improvement is likely also because of the COVID-19 pandemic. In 2020, the first year of the COVID-19 pandemic, admissions fell precipitously in Maryland and in our comparison group, and they haven't rebounded as of 2022.

Second, hospitals had to pause efforts to reduce service use and improve quality because of staffing shortages or staffing reassignments as a result of the COVID-19 pandemic. In all, 81% of hospitals reported that challenges operating during the COVID-19 pandemic was a great deal of a barrier to succeeding under global budgets, and, in survey comments, about one-third of hospitals specifically noted that staffing shortages and redeployments affected hospital investments in care changes under the MD TCOC Model.

"As we start looking at some of these workforce shortages [resulting from COVID-19], the corresponding piece is just the disruptions that we're having in our ability to provide care. So, if it's taking longer to get an appointment, and longer to get someone initiated with therapy… then that also is having impact not just on quality, but also on costs. And that's where I was saying that we're seeing some individuals [end] up in the emergency room in worse condition than they may have been otherwise had they received… earlier ambulatory-based care, which now means there's more cost because now you have a hospitalization."

–Hospital respondent

Finally, there was an acceleration nationally in the shift of care out of hospitals, which likely has made some of the interventions implemented in response to global budgets less unique to Maryland. For example, from 2020 to 2021, the number of inpatient stays per FFS beneficiary for musculoskeletal conditions, including joint replacements, declined 14.5% nationally, which was about four times faster than the rate before the COVID-19 pandemic (MedPAC 2023). This change was likely because of a combination of factors, including hospital staffing, patients' preferences, and policy changes such as the removal of certain procedures from the inpatient-only lists.

One notable exception to the plateauing of service use trends is a continued decrease in outpatient ED visits. One possible explanation for this is that ED visits, unlike admissions, did rebound nationally and in our comparison group. As a result, there was more room to prevent ED visits, especially compared with admissions, which have continued to stay more depressed. In addition, MDPCP resulted in a statistically significant reduction of non-emergent or primary-care-treatable ED visits in 2022, which could be partially driving the 2022 ED findings.

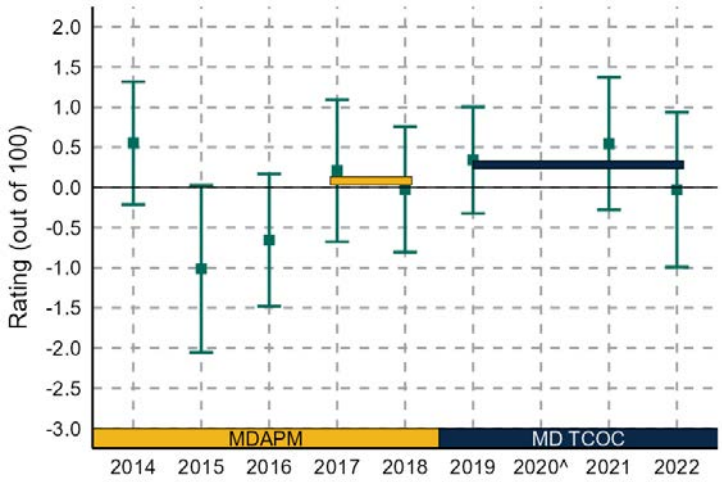
2.5. Model effects on patient experience and their possible drivers

2.5.1. Effects

2.4.1a. Patients' rating of their personal doctor

- Patients' rating of their personal doctor was measured using FFS and Medicare Advantage Consumer Assessment of Healthcare Providers and Systems (CAHPS®) surveys. The surveys ask patients to rate their personal doctor on a scale from 0 (worst) to 10 (best).
- Through the first four years of MD TCOC, the model has had no measurable effect on patients' rating of their personal doctor (Exhibit 2.26).

Exhibit 2.26. The model did not affect patients' rating of their personal doctor



	Estimated impact	
	Mean rating on a scale of 0 to 100 (CI)	Percentage[b]
Average at the end of MDAPM period (2017 and 2018)	**0.1 (-0.5, 0.7)**	**0.1%**
Average during the MD TCOC period (2019 to 2022)	**0.3 (-0.3, 0.9)**	**0.3%**
Difference[a]	0.2 (-0.4, 0.8)	0.2pp

Notes: (1) Data for patients' experience of their personal doctor come from the Medicare FFS and Medicare Advantage CAHPS surveys. (2) ^The surveys did not collect data in 2020, the first year of the COVID-19 pandemic. (3) Green squares represent the impact estimates each year from 2014 to 2022, with error bars representing the 90% confidence interval. Horizonal yellow and blue bars represent the average yearly impact during the last two years of MDAPM and the full MD TCOC period, respectively. (4) Estimates in which the intervals do not span zero are statistically different from zero at a $p < 0.10$ threshold.

[a] This is the percentage impact in 2019 to 2022 minus the percentage impact in 2017 and 2018.

[b] This is the impact estimate divided by the unadjusted Maryland mean minus the impact estimate.

* $p < 0.10$; ** $p < 0.05$.

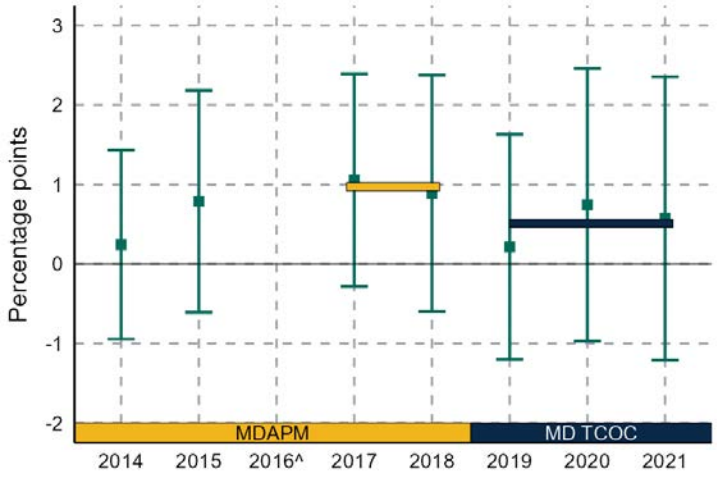
CAHPS = Consumer Assessment of Healthcare Providers and Systems; FFS = fee for service; pp = percentage point.

2.4.1b. Patients' rating of their hospital

- Patients' rating of their hospital was measured using the Hospital CAHPS survey, given randomly to any patient admitted to the hospital, including non-Medicare enrollees. The survey asks patients to rate their hospital experience overall on a scale from 0 (worst) to 10 (best). The data are then aggregated to the hospital level as the percentage of respondents rating the hospital 9 or 10.[30]
- Under global budgets, there is some risk that hospitals could lower patients' experience either through model incentives to provide less-intensive services or because hospitals might have less incentive to improve patients' experience as a way of increasing demand and therefore volume, unlike under FFS. But we found no evidence that the model improved or worsened patients' rating of their hospital collected via Hospital CAHPS (Exhibit 2.27).

[30] We focus on the percentage rating 9 or 10 because the majority of patients rate their hospitals one of these two scores.

Exhibit 2.27. The model did not improve or worsen patients' ratings of their hospital



	Estimated impact	
	Percent of respondents rating hospital 9 or 10 (CI)	Percentage[b]
Average at the end of MDAPM period (2017 and 2018)	**1.0pp (-0.4, 2.3)**	**1.5%**
Average during the MD TCOC period (2019 to 2022)	**0.5pp (-1.0, 2.0)**	**0.7%**
Difference[a]	-0.5pp (-1.3, 0.4)	-0.8pp

Notes: (1) Data for patients' experience of their hospital doctor come from the Hospital CAHPS survey. (2) ^Data in 2016 was excluded because several large hospitals in Maryland did not report scores in that year, potentially skewing results. Data were only available through 2021. (3) Green squares represent the impact estimates each year from 2014 to 2022, with error bars representing the 90% confidence interval. Horizonal yellow and blue bars represent the average yearly impact during the last two years of MDAPM and the full MD TCOC period, respectively. (4) Estimates in which the intervals do not span zero are statistically different from zero at a p < 0.10 threshold.

* $p < 0.10$; ** $p < 0.05$.

[a] This is the percentage impact in 2019 to 2022 minus the percentage impact in 2017 and 2018.

[b] This is the impact estimate divided by the unadjusted Maryland mean minus the impact estimate.

CAHPS = Consumer Assessment of Healthcare Providers and Systems; pp = percentage point.

2.5.2. Drivers

2.5.2a. Why the model did not impact patients' ratings of their personal doctors (via CAHPS)

The model could have improved patients' rating of their personal doctor through MDPCP. One element of MDPCP tied to patients' experience is the patient experience measure included as part of the program's performance-based incentive payments. Practices reported that they largely did not use the performance-based payments to make care changes because they were at risk of being recouped if they did not meet certain quality and utilization benchmarks and only constituted up to 2% of MDPCP practice revenue. In addition, other MDPCP care delivery requirements that would be most likely to drive changes in patient experience—such as patient and family advisory councils, empanelment, improved access, referral management, planned care, and population health—were generally not major areas of practice change often because they were in place before the start of the MDPCP (see Chapter 5). In addition, we estimated impacts statewide and not just for the roughly 50% of beneficiaries seen by MDPCP practices, potentially diluting any true impact of this program. Finally, patients tended to rate their doctors highly (mean score greater than 9 out of 10 in 2022) in Maryland and the comparison group. This high baseline rating limits the model's ability to demonstrate impacts on patient experience because there is less room for improvement.

2.5.2b. Why the model did not impact patients' ratings of their hospital (via Hospital CAHPS)

In response to the model, hospitals in Maryland made substantial care delivery changes that resulted in reductions in service use and improvements in related quality of care measures, but they did not significantly impact patient experience ratings. There are potentially a few explanations for this lack of effects on beneficiaries' experience. First, many hospitals had high patient ratings (65% of respondents rated their hospital 9 or 10 out of 10 in 2021), leaving less room for improvement. Second, although patient experience measures are part of the quality measures in the hospital quality programs, they are only one of many quality measures, potentially diluting incentives to work on patient experience directly.

> *"We could have that technology, but that technology comes at a cost… and the cost might be great. We're going to bring in this great robotic technology or this new drug or whatever it is, but if we're going to bring that in, we need to offset that somehow by maybe saying that we're not going to update our facility [even though] facility updates do mean something to patients."*
>
> –Hospital respondent

Although the model did not improve patients' experience, the fact that it did not worsen patients' ratings is reassuring to some degree. In interviews, hospitals reported that global budget constraints forced them to make tradeoffs in investing in new therapies and technologies versus other hospital priorities that might affect patients' experience of their hospital, such as infrastructure improvements. The evidence suggests that hospitals are navigating these tradeoffs in ways that have not harmed overall patient ratings of their hospital. Still, one might expect that hospitals that have successfully reduced volume, and thus operating costs, within fixed budget could reinvest some of this net revenue to improve patients' experience. Although some hospitals may have done so, this appears not to have occurred on a widespread enough level to measurably improve patient ratings statewide.

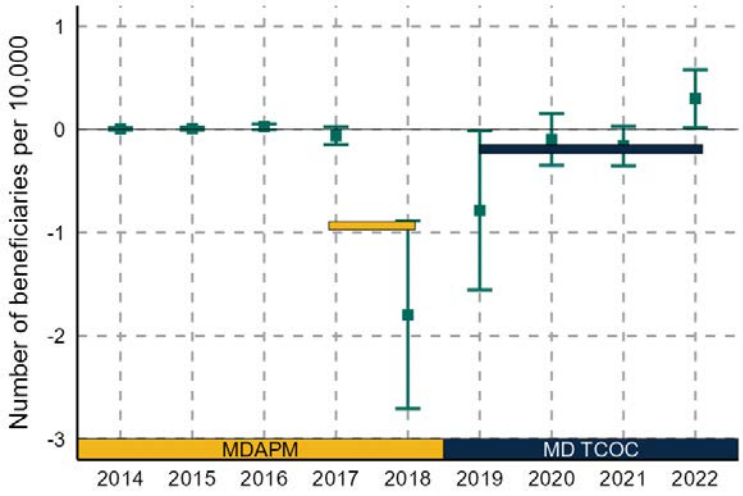
2.6. Model effects on the use of Medicare DPP services and their possible drivers

We estimated impacts on the use of Medicare DPP services because the DPP is one of the key ways the model aims to reach its population health goals of reducing body mass index and diabetes. DPP is an evidence-based Medicare program that aims to prevent type 2 diabetes among people with prediabetes. DPP use is tracked explicitly in the Statewide Integrated Health Improvement Strategy (SIHIS) (HSCRC 2020a). The state can also receive Outcomes-Based Credits from CMS focused on the prevention of diabetes, and Regional Partnership Catalyst Grants specifically fund hospitals and their partners to increase the provision of DPP services.

2.6.1. Effects

- On average, the model has not increased use of Medicare DPP services during the MD TCOC period (Exhibit 2.28).
- The DPP became billable to Medicare in 2018, but rates remain extremely low in claims. Neither Maryland nor the comparison group showed much change in DPP services during since 2019, with fewer than 1 in every 10,000 beneficiaries using any DPP services in 2022 (see Appendix B.1.5 for unadjusted rates over time and Section 2.6.2 for additional details on why services remain low in claims).

Exhibit 2.28. Through its first four years, the model has not affected use of Medicare DPP services



	Estimated impact	
	# of services per 10,000 beneficiaries per year	Percentage[b]
Average at the end of MDAPM period (2017 and 2018)	**-0.9** (-1.4, -0.5)**	**-56.2%**
Average during the MD TCOC period (2019 to 2022)	**-0.2 (-0.5, 0.1)**	**-33.3%**
Difference[a]	0.7** (0.3, 1.2)	22.9pp

Notes: (1) Rates of DPP are extremely low in Medicare claims (<1 per 10,000 beneficiaries in 2022). As such, some of the percentage impacts can appear large and misleading because of division by very small denominators. (2) Green squares represent the impact estimates each year from 2014 to 2022, with error bars representing the 90% confidence interval. Horizonal yellow and blue bars represent the average yearly impact during the last two years of MDAPM and the full MD TCOC period, respectively. (3) Estimates in which the intervals do not span zero are statistically different from zero at a $p < 0.10$ threshold.

[a] This is the percentage impact in 2019 to 2022 minus the percentage impact in 2017 and 2018.

[b] This is the impact estimate divided by the unadjusted Maryland mean minus the impact estimate.

* $p < 0.10$; **$p < 0.05$.

DPP = Diabetes Prevention Program; pp = percentage point.

2.6.2. Drivers

The main model feature that could logically affect use of DPP services is the Regional Partnership Catalyst Grants that focus on the implementation of diabetes prevention and management programs. HSCRC funded six diabetes-focused Regional Partnerships; funding began in 2021 and lasts for five years, at which point HSCRC expects the partnerships to be self-sustaining (HSCRC 2020b, 2020c).

> *"In theory there are plenty of people who need these [DPP] programs. In practice, getting them to actually be referred and enrolled is just tougher… it's hard, I think, to get someone to commit to a year-long intervention for a disease that they might get. So, a lot of it is around how you message, and how you craft the benefits, of said program."*
>
> –Hospital respondent

Consistent with the grant proposals, during the first two years of the funding period, Regional Partnerships have focused on building DPP capacity and increasing referrals to DPPs. DPPs are evidence based, year-long programs for people at risk of developing type 2 diabetes focused on supporting lifestyle behavior change to promote physical activity and weight loss and prevent diabetes (CDC 2023; Medicare.gov n.d., Johns Hopkins Medicine n.d.). During the first six months of the program, participants attend weekly group sessions and during the final six months, participants attend monthly follow-up sessions (Medicare.gov n.d.). During hospital site visits, respondents explained that partnerships have had some success at increasing DPP capacity by initiating new DPPs and increasing the number of programs offered under existing DPPs. They have also had moderate success increasing referrals by reviewing hospital electronic health records to identify eligible people, leveraging a new referral tool that is integrated into the Chesapeake Regional Information System for our Patients (CRISP), working with community organizations, and partnering with MDPCP practices.

Despite these successes, the partnerships have struggled to meet the original targets for referrals identified by HSCRC as a condition of their continued funding. As a result, HSCRC reduced the targets, and one Regional Partnership's funding was terminated.

Partnerships have also faced challenges converting referrals to enrollment and with billing Medicare. During hospital site visits, respondents explained that, to improve enrollment rates, some partnerships are working on having more DPPs beginning at different times so that, as soon as people are referred, they can enroll. Enrollment is not limited to Medicare beneficiaries, however, and even when Medicare beneficiaries do enroll, DPP providers face challenges billing Medicare because payment is based on the number of sessions that an enrollee attends and on the achievement of weight loss targets over time (CMS n.d.). In addition, only DPP sessions that are completed in person are eligible for Medicare payment.

Getting enrollees to complete the number of in-person sessions required for full Medicare reimbursement can be challenging because, as one hospital site visit respondent explained, enrollees do not yet have diabetes, so they might be less motivated than people who have been diagnosed with the condition to participate in ongoing sessions and change their lifestyle. Some

might also face challenges to participating because of a lack reliable transportation. During our study period, only two Regional Partnerships had DPPs that were billing Medicare, and the amount of revenue that these partnerships generated through Medicare billing was very low.

Despite these challenges, moving forward, these partnerships could have a larger impact on the use of Medicare DPP services. All Regional Partnerships are expected to begin billing Medicare by early 2023 or to expand the number of DPPs billing the Medicare program. One partnership is also establishing an Administrative Umbrella Hub to support community- and hospital-based DPPs with Medicare and Medicaid billing. In addition, as a condition of funding in 2023 and 2024, partnerships must achieve enrollment and retention targets based on submitted Medicare and Medicaid claims (HSCRC 2020c). Therefore, partnerships should be changing their focus from establishing programs and improving referrals to DPP enrollment and retention.

2.7. Changes in behavioral health services not directly linked to measured outcomes

In addition to care changes driving the observed model effects, the MD TCOC Model has driven care changes for behavioral health services across the state. These additional care changes are likely not driving observed model effects because many were only introduced in 2021 as part of HSCRC-funded Regional Partnerships. Nonetheless, they represent important care changes that are directly tied to model incentives and supports.

At the same time HSCRC funded the diabetes-focused Regional Partnerships, the HSCRC funded three Regional Partnerships that aim to promote the treatment of people with behavioral health issues in appropriate community settings rather than in the ED (HSCRC 2020b). Since funding began in 2021, these Regional Partnerships have been putting their efforts toward establishing regional call centers, mobile crisis teams, and crisis stabilization centers to divert behavioral health patients from the ED and hospital care.

During hospital site visits, respondents expressed significant enthusiasm for these activities but noted that the crisis stabilization centers specifically were in the early stages of implementation or not yet operating at full capacity. One key challenge that several of these partnerships have experienced is hiring appropriate staff to support these efforts. Staffing shortages have led to delays in implementation of these care changes and to crisis centers operating for fewer hours per week than originally planned. Partnerships have also experienced some technological challenges with, for example, establishing alert processes through CRISP and with implementing phone systems for regional call centers.

Despite these challenges, the Regional Partnerships are serving an increasing number of people through the care changes they are implementing, and they are also forming strong bonds between hospitals and community organizations. For example, one partnership reported serving more than a thousand patients in its crisis centers in 2022, with its volume increasing over time. Another partnership increased the number of dispatches of its mobile crisis teams, eventually serving more than 200 patients a month. Partnerships reported holding regular meetings involving hospitals, local government agencies such as health departments, and behavioral health organizations such as the Mental Health Association of Maryland to address barriers and improve the design and uptake of care changes.

> *"There's an unprecedented level of collaboration [with the behavioral health Regional Partnerships] to get everybody moving in the same direction. And if the program's successful, then it really could be the foundation or the structure for other big social determinants of health issues. It could be the platform for the ideal public–private partnership."*
>
> –Hospital respondent

Similar to the diabetes Regional Partnerships, as a condition of continued funding, these partnerships must meet specific targets related to reducing ED wait times or boarding times and reducing repeat ED utilization for behavioral health issues during the latter years of the five-year grant period (HSCRC 2020c). If these partnerships are successful, their efforts could lead to reductions in ED utilization across the state.

2.8. Chapter summary

Statewide, during the MD TCOC period (2019-2022), the model had favorable average effects on spending, service use and quality. Reductions in total spending (2.1%) were driven by large reductions in hospital spending (6.1%), which is set each year by the state via hospital global budgets, offsetting smaller increases in non-hospital spending (3.1%). Substantial reductions in hospital admissions (16.2%), ED visits and observation stays (5.9%), and 30-day unplanned readmissions (8.9%) were driven by the global budgets' strong incentives to reduce hospital care and large room for improvement on these measures based on how Maryland compared to the rest of the nation before the model began.

The model generally had more favorable results during the MD TCOC period than it did at the end of the MDAPM period (2017-2018), signaling further improvement. Most of those additional gains occurred in 2019. Since 2019, the model has generally sustained but not increased effects for most service and quality measures, while effects on total Medicare spending have gotten smaller.

This leveling off of effects may be explained by a combination of (1) state actions that allowed hospital spending to grow at or near the nation compared to more aggressive constraints; (2) disruption to programs, policies and interventions caused by the COVID-19 pandemic; and (3) less room for improvement on service use measures as a result of past successes and new trends in the rest of the nation toward less reliance on hospital inpatient care.

Maryland and CMS have recognized the challenges with lower savings in 2022, driven partly by the state relying on actuary projections that anticipated greater rebounds in Medicare spending nationally after the COVID-19 pandemic than occurred. The state has taken a variety of steps to increase hospital savings in 2023, including increasing the public-private differential in rates and reducing Medicare hospital spending specifically though the Medicare Performance Adjustment Savings Component.

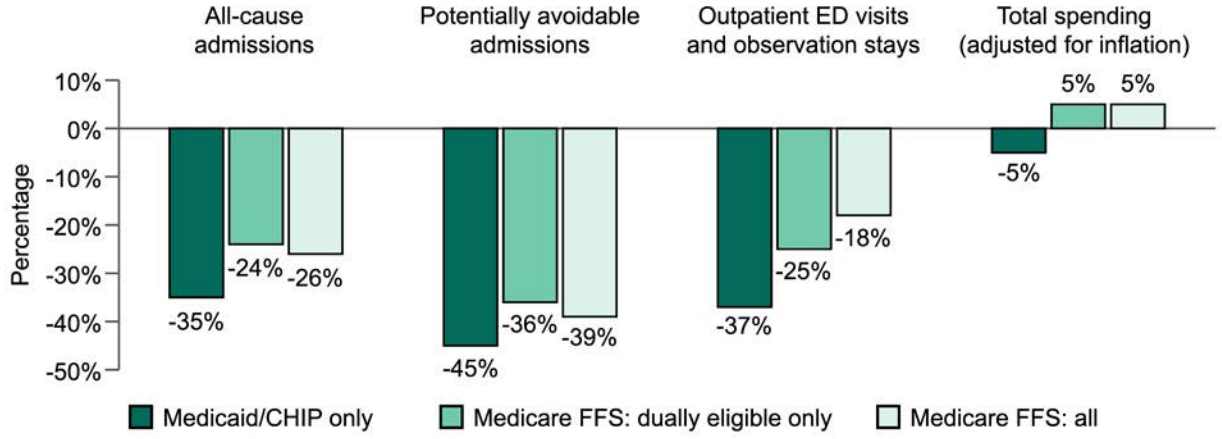
The evaluation will continue to assess statewide impacts of the model and the drivers of those impacts through its scheduled end in 2026.

Chapter 3. Trends in Outcomes for Medicaid and Children's Health Insurance Program Enrollees, 2014 to 2021

Key findings

- From 2014 to 2021, inpatient hospital and outpatient emergency department use declined for Maryland's Medicaid and Children's Health Insurance Program population (Exhibit 3.1). These trends are consistent with the MD TCOC Model's goals and incentives, which began under the MDAPM, and with similar trends in the Medicare fee-for-service population.
- Per-capita inflation-adjusted total spending for Medicaid and Children's Health Insurance Program enrollees also declined from 2014 to 2021, but it increased in the Medicare population.
- Global budgets and the quality adjustments to them apply to all payers. So, many of the strategies that hospitals are pursing to reduce avoidable hospital and emergency department use would apply to Medicaid and Medicare populations. For example, hospitals implemented enhanced discharge planning and opened urgent care centers, which could be driving Medicaid and CHIP trends.
- These are descriptive analyses, and, without a comparison group, they may not reflect impacts of the model. For example, larger declines in hospital use in 2020 and 2021 compared with earlier years could reflect influences of both the model and the COVID-19 pandemic.

Exhibit 3.1. Hospital use decreased in Maryland from 2014 to 2021 for Medicaid and CHIP enrollees, as it did for Medicare populations



Source: Mathematica's analyses of Medicare FFS enrollment and claims data and Maryland TAF data, 2014 – 2021.

Notes: (1) Trends are regression-adjusted to hold population characteristics constant over time in terms of age, sex, and reason for entitlement (Medicare) and major eligibility category (Medicaid and CHIP). (2) Dually eligible means that the beneficiary is enrolled in Medicare FFS and Medicaid. The Medicaid/CHIP bars exclude people who are dually eligible.

CHIP = Children's Health Insurance Program; ED = emergency department; FFS = fee for service; TAF = Transformed Medicaid Statistical Information System Analytic File.

In this chapter, we examine trends in service use, quality, and spending outcomes for Medicaid and Children's Health Insurance Program (CHIP) enrollees in Maryland during the Maryland

Model (2014 to 2021). The Medicaid and CHIP population in Maryland is large, nearly twice the size of the Medicare fee-for-service (FFS) population. The model could influence outcomes for the Medicaid and CHIP population for three reasons. First, the state's quality goals for the model are generally for all Maryland residents, including Medicaid and CHIP enrollees. Indeed, several goals in the Statewide Integrated Health Improvement Strategy (SIHIS) target outcomes highly relevant to the Medicaid and CHIP population, including reductions in severe maternal morbidity[31] and asthma-related emergency department (ED) visits for children ages 2 to 17. Second, the core global budget incentive that began in 2014 and continued into the MD TCOC period applies to all payers. Finally, the state agreement includes a financial test that applies to all payers (that per-capita hospital spending not exceed 3.58%), including Medicaid and CHIP. Further, although the core savings requirements in the state agreement establishing the MD TCOC Model apply only to Medicare FFS beneficiaries, one of the state's key mechanisms to achieve total Medicare savings is to reduce the growth in all-payer hospital global budgets. As a result, efforts to limit growth in Medicare hospital spending could also limit growth in Medicaid and CHIP hospital spending.

We interpret the Medicaid and CHIP trends relative to how we expect the model to work and to findings from the Medicare FFS trends and impacts analyses from Chapter 2. We do not, however, interpret Medicaid and CHIP trends as impacts of the model since we did not have a comparison group, so we cannot isolate external factors that may be contributing to the observed trends.

3.1. Methods

We assessed regression-adjusted trends in key outcomes for Maryland Medicaid and CHIP enrollees from 2014 to 2021. The analysis was limited to trends because of the complexity of finding a comparison group with a similar policy landscape and data availability (see Appendix C). We limited our analyses to 2014 and later because the federal source for Maryland Medicaid and CHIP enrollment and claims data switched from the Medicaid Analytic eXtract (MAX) to the Transformed Medicaid Statistical Information System (T-MSIS) Analytic File (TAF) in 2014, the same year as the launch of the Maryland All-Payer Model (MDAPM). The data quality between the MAX and TAF differ enough that we would be unable to interpret whether any changes in trends were because of the change in data quality or because of true changes in enrollee outcomes if we reported trends that included 2011 to 2013 MAX data. The most recent year available for the TAF is 2021. Appendix C provides more detail on our methods and measures as well as descriptions of data issues encountered with the Maryland TAF and how we implemented workarounds to account for these issues.

[31] We were unable to include analyses of severe maternal morbidity in this chapter due to poor quality procedure code data in the Maryland inpatient TAF in many years.

The purpose of the regression adjustment is to control for changes in the population over time that might influence trends because of changes in eligibility or demographic shifts in Maryland. The Medicaid and CHIP regressions adjusted for age, sex, major eligibility category (pregnant, child, people with disabilities, adult non-expansion, adult expansion, and aged), enrollment in a waiver or authority that provides home and community-based services (HCBS),[32] race and ethnicity (by zip code), whether living in a rural region, and the Social Vulnerability Index (SVI) summary score (by Census tract).[33] To calculate the adjusted mean value of each outcome for each year, we held 2014 population characteristics constant and predicted changes in outcomes from our regressions in each year.

We selected the following outcomes because we can measure them in Medicaid claims and because the model could logically improve them (see Chapter 1): all-cause admissions, potentially avoidable admissions, all-cause ED visits, asthma-related ED visits for children ages 2 to 17, and total spending. See Appendix A.4 for a description of the overlap between outcome measures and model goals in SIHIS and the state agreement for Medicare FFS and Medicaid and CHIP populations.

As a point of comparison, we also report regression-adjusted trends for the Maryland Medicare FFS population using the same approach for most of the same outcomes over the same time frame. The Medicare trends analyses include the beneficiaries dually eligible for Medicare and Medicaid. We excluded dually eligible beneficiaries from the Medicaid and CHIP analysis population because Medicare is the primary payer for inpatient and outpatient hospital care and thus, we would not obtain a full Medicaid claims picture for dually eligible beneficiaries. These regressions adjusted for age, sex, original reason for entitlement, new enrollee status, dual eligibility status, race and ethnicity (measured at the beneficiary level), rurality, and SVI summary score (by Census tract). In Appendix C, we provide supplemental findings of trends for the full Maryland Medicare FFS population as well as separately for dually eligible beneficiaries and non-dually eligible beneficiaries.

During the COVID-19 pandemic, many people avoided hospital-based care. For this reason, we expected to observe relatively large declines in inpatient and outpatient hospital use in 2020 and 2021 in the trends analyses that were unrelated to the model (and, without a comparison group, will not be differenced out like they are for statewide impacts in Chapter 2). To help interpret trends, we assessed the percentage change in outcomes over two time periods: 2014 to 2019, which excludes the years affected by the COVID-19 pandemic, and 2014 to 2021, which includes the years affected by the COVID-19 pandemic.

[32] This includes, for example, enrollees in a 1915(c) waiver, which provides HCBS to people with disabilities who otherwise qualify for care in an institutional setting but instead receive services in their homes.

[33] The Centers for Disease Control and Prevention developed the SVI to measure a community's vulnerability to human suffering and financial loss in a disaster (GRASP n.d.), with higher scores indicating greater vulnerability. The SVI summary score is a national percentile ranking of each census tract based on where it falls on a continuum across four broad domains: socioeconomic status, household composition and disability, minority status and language, and housing type and transportation.

3.2. Characteristics of study population

Medicaid and CHIP in Maryland enrolled more than 1.3 million non-dually eligible people in 2021. Nearly half of all eligible Maryland Medicaid and CHIP enrollees were children, 27% were adult expansion enrollees, and 17% were non-expansion adult enrollees[34] (Exhibit 3.2). The areas that Medicaid and CHIP enrollees lived in had a mean SVI summary score of 50, indicating greater social vulnerability than the mean of 37 we observed in the Medicare FFS population. About 6.6% of Medicaid and CHIP beneficiaries lived in a rural area (see Appendix Exhibit C.4).

In the following sections, we report trends for Maryland Medicaid and CHIP enrollees and for comparison Maryland Medicare FFS beneficiaries.

Exhibit 3.2. The Medicaid and CHIP analysis population was nearly twice the size of the Medicare FFS analysis population in 2021, and about half of Medicaid and CHIP enrollees were children

Populations	Number of enrollees in analysis population in 2021, weighted[a]	Percentage of the analysis population in 2021
Medicaid and CHIP (not also enrolled in Medicare), all	1,347,862	100.0
Child	656,657	48.7
Adult, expansion	363,478	27.0
Adult, non-expansion	229,844	17.1
People with disabilities	77,911	5.8
Pregnancy	15,244	1.1
Aged	4,748	0.4
Medicare FFS, all	737,204	100.0
Dually eligible for Medicare and Medicaid	125,314	17.0
Not dually eligible for Medicare and Medicaid	611,891	83.0

Note: (1) Mathematica's analyses of Maryland T-MSIS Analytic File annual demographics and eligibility data and Medicare FFS enrollment data. (2) The analysis population for the Medicaid and CHIP population includes all Maryland Medicaid enrollees except those dually eligible for Medicare and Medicaid, (3) To be included in the Medicaid and CHIP analysis population, individuals had to be exclusively enrolled in Medicaid or CHIP with full benefits in at least one month of the year, (4) The analysis population for the Medicare FFS population includes all Maryland Medicare FFS beneficiaries, including those dually eligible for Medicare and Medicaid, (5) To be included in the Medicare FFS analysis population, beneficiaries had to be enrolled in Medicare FFS Parts A and B with Medicare as primary payer for at least one month of the year.

[a] We weighted each enrollee by the number of months they contributed to the analysis in 2021. Numbers might not sum to the total due to rounding.

CHIP = Children's Health Insurance Program; FFS = fee for service; T-MSIS = Transformed Medicaid Statistical Information System.

[34] Maryland expanded Medicaid to adults with incomes below 138% of the federal poverty level under the Affordable Care Act. We describe enrollees who qualified for Medicaid under this pathway as "adult expansion enrollees" and adults who qualified under other pathways as "non-expansion enrollees."

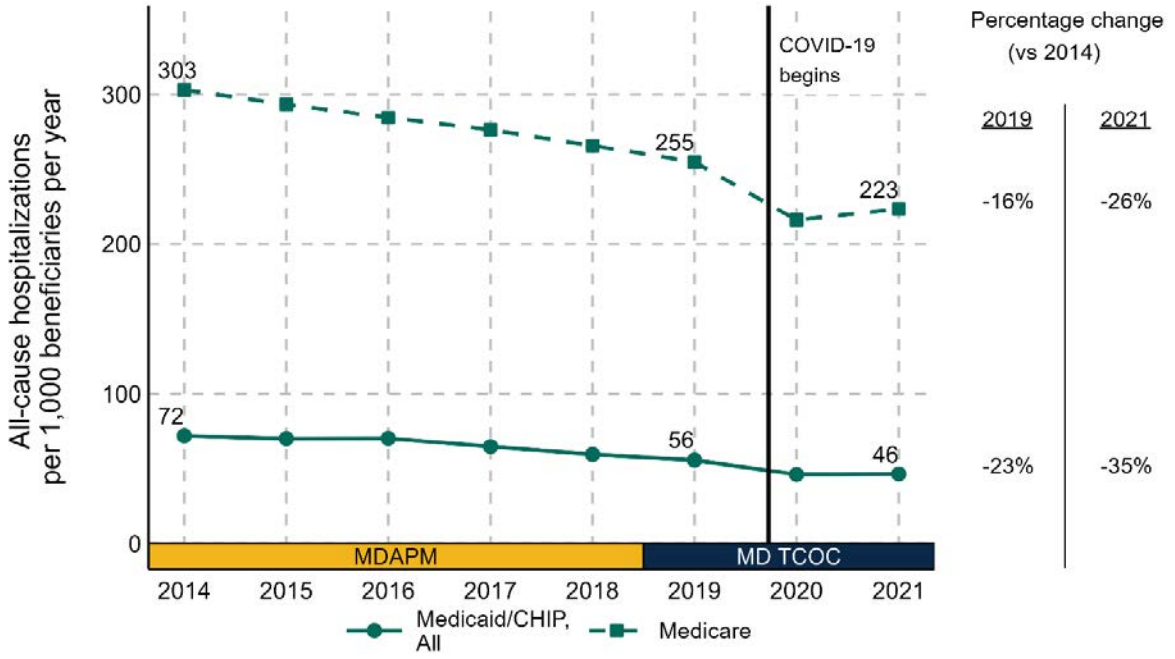
3.3. Statewide trends in admissions, preventable admissions, and ED use, and their possible drivers

3.3.1. Trends

3.3.1a. All-cause acute-care hospital admissions

The Maryland Medicaid and CHIP population had 35% fewer all-cause admissions in 2021 than in 2014, consistent with the model's goals and incentives. These percentages were substantively greater than the percentage declines between 2014 and 2019 (a 23% decrease in all-cause admissions), suggesting that some portion of the downward trends through 2021 is likely associated with the COVID-19 pandemic. Although the Maryland Medicaid and CHIP population had much lower absolute rates of all-cause admissions than the Maryland Medicare FFS population, the percentage change in all-cause admissions over these two time periods (2021 versus 2014 and 2019 versus 2014) were larger or about the same for the Medicaid and CHIP population than for the Medicare population (Exhibit 3.3). Trends in all-cause admissions for people dually eligible for Medicare and Medicaid were similar to trends for the full Medicare FFS population, though the dually eligible population had higher levels of all-cause admissions in all years (see Appendix Exhibit C.5).

Exhibit 3.3. All-cause acute care hospital admissions per 1,000 enrollees per year declined for the Medicaid and CHIP population and the Medicare FFS population



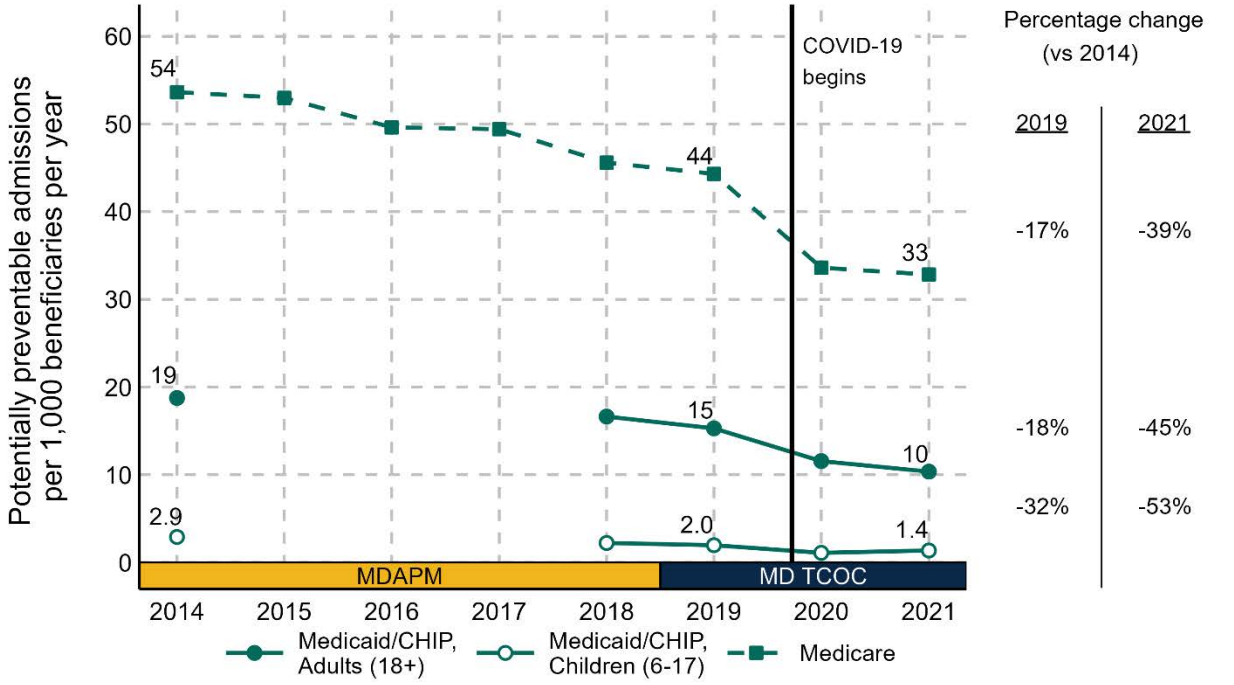
Notes: (1) Mathematica's analyses of Medicare FFS enrollment and inpatient claims and Maryland's TAF data. (2) All-cause hospitalizations for the Medicaid and CHIP population exclude stays for pregnancy, delivery, or neonates. (3) In 2021, the analysis populations included N = 1,347,862 Medicaid and CHIP enrollees and N = 737,204 Medicare FFS beneficiaries.

CHIP = Children's Health Insurance Program; FFS = fee for service; TAF = Transformed Medicaid Statistical Information System Analytic File.

3.3.1b. Potentially avoidable admissions

Maryland's Medicaid and CHIP population had 45% fewer potentially avoidable admissions for adults and 53% fewer potentially avoidable admissions for children ages 6 to 17 in 2021 than in 2014 (Exhibit 3.4). Similar to all-cause admissions, a sizeable portion of the decline in potentially avoidable admissions happened during the COVID-19 pandemic period in 2020 and 2021. Again, absolute rates are lower in the Medicaid and CHIP population than in the Medicare FFS population, but percentage reductions over time were similar, particularly for Medicaid adults.

Exhibit 3.4. Potentially avoidable admissions per 1,000 enrollees per year decreased for Maryland's Medicaid and CHIP population and the Medicare FFS population



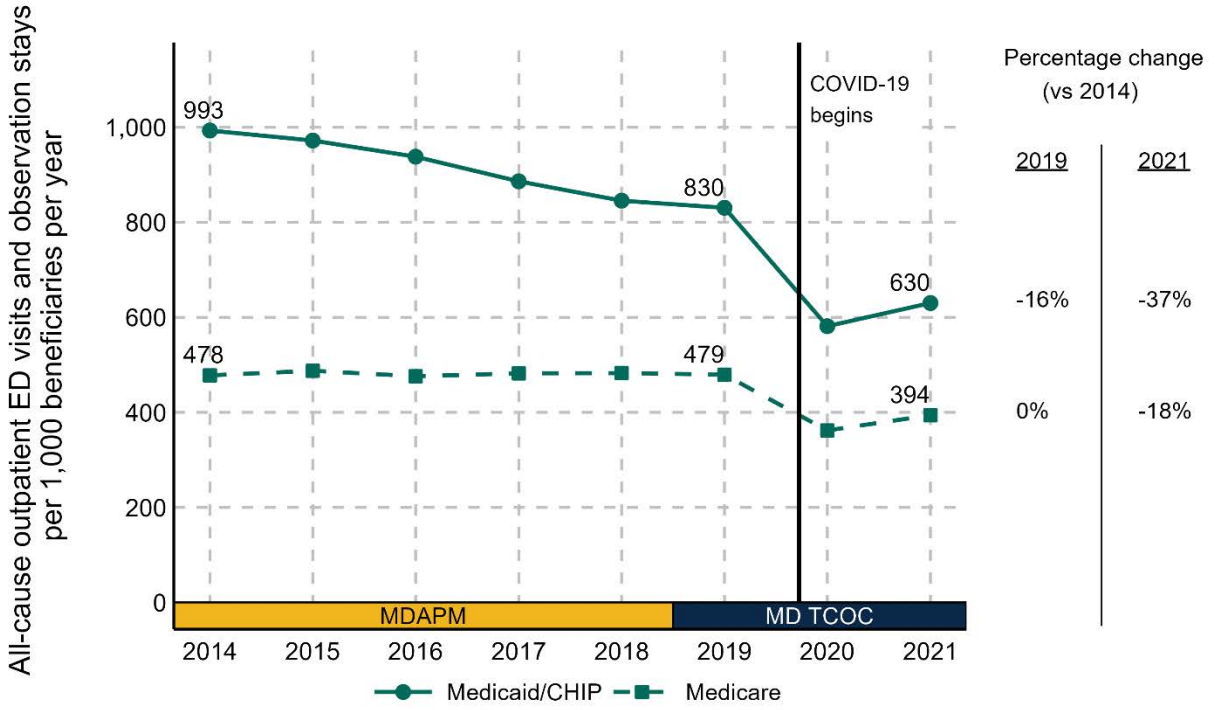
Notes: (1) Mathematica's analyses of Medicare FFS enrollment and inpatient claims and Maryland's TAF data. (2) Analyses of potentially avoidable admissions are based on the Agency for Healthcare Research and Quality's PQI software and are measured for hospital admissions for adults ages 18 and older and PDIs for children ages 6 to 17. See Appendix C for more details on which admission types are included in the PQIs and PDIs. (3) For Medicaid PQI and PDI analyses, we did not apply procedure code-based exclusions and did not construct the PQI for lower extremity amputation among patients with diabetes because of poor quality procedure code data on the Maryland TAF inpatient file between 2014 and 2019.(4) There are no data points for 2015 to 2017 for Medicaid and CHIP because the diagnosis codes in the Maryland inpatient TAF were unusable in these years. (5) In 2021, the analysis populations included N =725,176 Medicaid and CHIP enrollees ages 18 years and older, N = 407,266 Medicaid and CHIP enrollees ages 6 to 17 years, and N = 737,204 Medicare FFS beneficiaries.

CHIP = Children's Health Insurance Program; FFS = fee for service; PDI = Pediatric Quality Indicator; PQI =Prevention Quality Indicator; TAF = Transformed Medicaid Statistical Information System Analytic File.

3.3.1c. Outpatient ED visits and observation stays

The Medicaid and CHIP population had 37% fewer outpatient ED visits and observation stays in 2021 than in 2014 (Exhibit 3.5). This change was heavily influenced by the COVID-19 pandemic: the Medicaid and CHIP population had only 16% fewer outpatient ED visits and observation stays in 2019 than in 2014. For both comparisons (2021 versus 2014 and 2019 versus 2014), the percentage reduction was larger for Medicaid and CHIP enrollees compared with Medicare FFS beneficiaries. Indeed, the adjusted trends for Medicare FFS beneficiaries show that rates of outpatient ED visits and observation stays remained about the same from 2014 to 2019, declining only after the COVID-19 pandemic began.

Exhibit 3.5. Medicaid and CHIP enrollees had greater use of outpatient ED and observation services and greater declines in use over the study period compared with Medicare FFS beneficiaries



Notes: (1) Mathematica's analyses of Medicare fee-for-service enrollment and inpatient claims and Maryland TAF data; (2) In 2021, the analysis populations included N = 1,347,862 Medicaid and CHIP enrollees and N = 737,204 Medicare FFS beneficiaries.

CHIP = Children's Health Insurance Program; ED = emergency department; TAF = Transformed Medicaid Statistical Information System Analytic File.

3.3.2. Drivers

Because global budgets and the quality adjustments to them apply to all payers, many of the strategies that hospitals are pursing to reduce preventable hospital and ED use (see Chapter 2) reach the Medicaid and CHIP population and the Medicare population. For example, during site visits, all hospitals reported implementing enhanced discharge planning and several hospitals reported providing multidisciplinary rounding across all payers to reduce readmissions. Hospitals also made several investments in alternatives to the ED that were generally not payer specific, including opening urgent care centers, partnering with behavioral health crisis centers, and partnering with emergency medical services to reduce the number of such transports for people who frequently use 911 services.

The state health information exchange, Chesapeake Regional Information System for our Patients (CRISP), contains health data for all Maryland residents, so it can support hospitals' efforts to reduce preventable hospital use for Medicaid and CHIP enrollees. For example, one hospital put care plans into CRISP for people who frequently use the ED to help with continuity and reduce duplication of care regardless of where the patient presents for services. CRISP also allows hospitals and the state to stratify quality measures and performance on SIHIS milestones by payer for monitoring and improvement.

During site visits, hospitals generally described new programs that would likely affect the Medicaid and CHIP population that began during the MDAPM period in response to quality-adjusted global budgets. Staff from Maryland Medicaid participate in the design of the Maryland quality programs, and, over time, the quality programs have been adjusted to address Medicaid priorities and populations. But most new model components that began during the MD TCOC period (including the Maryland Primary Care Program and episode-based payment models) do not provide payment support for Medicaid and CHIP enrollees.[35] The one exception is the catalyst grants—which target diabetes prevention and management and behavioral health crisis services—which are important issues for the Medicaid population.

In addition to model incentives and supports, the COVID-19 pandemic and Medicaid policies may have contributed to the observed trends (see Box 3.A). The COVID-19 pandemic led to large decreases in hospital use in 2020 and 2021 in Maryland and the rest of the nation. Nearly 35% of the total reduction in all-cause admissions and more than half of the total reduction in outpatient ED visits and observation stays from 2014 to 2021 happened during the COVID-19 pandemic. This is consistent with trends to avoid hospital use generally during that time and might be even more applicable to the Medicaid and CHIP population if hospital use (related to the COVID-19 pandemic or not) for this younger population were more avoidable than for older and disabled Medicare beneficiaries.

[35] Although payments for Maryland Primary Care Program are provided per attributed Medicare beneficiaries, some Maryland Primary Care Program requirements and care changes likely affected all patients in a practice, including Medicaid and CHIP enrollees (for example, access changes, electronic health record improvements, and some of the additional staffing).

Box 3.A. Medicaid policies might have contributed to lower per-capita hospital use and spending over the study period, 2014 to 2021

Some of the downward trends in hospital use and spending among Maryland's Medicaid and CHIP population might be because of the state's Medicaid programs and policies. For example, two key policy changes to Maryland Medicaid might have influenced the downward trends in hospital-related use and per-capita spending: (1) the Medicaid expansion under the Affordable Care Act in 2014 and (2) the continuous enrollment requirement during the public health emergency period of the COVID-19 pandemic in 2020 and 2021. Even though we held the characteristics of the population constant when estimating regression-adjusted trends, unobserved changes in the health status of the Medicaid and CHIP population over time because of these policy changes could still influence the observed trends. Specifically:

- **Medicaid expansion under the Affordable Care Act.** In January 2014, Maryland expanded its Medicaid program to childless adults under the Affordable Care Act. Enrollment in this group grew over time from 18% in 2014 to 27% in 2021. Even though we adjust for changes in the composition of the population over time, if adult expansion enrollees in later years were healthier than those who enrolled earlier, per-capita hospital service use and spending could decline.
- **Continuous enrollment during the public health emergency.** In 2020 and 2021, during the public health emergency, Congress increased Medicaid funding to states. In exchange, states were not allowed to terminate enrollees' Medicaid coverage until the public health emergency ended unless enrollees requested disenrollment, moved out of state, or died (Erzouki 2022; Wikle and Wagner 2022). Some enrollees who otherwise would have lost eligibility for Medicaid during the public health emergency might have obtained other coverage (for example, employer-sponsored coverage). If we do not observe services paid by other insurances, this would lower observed use of health care services because Medicaid should be the secondary payer (Buettgens and Green 2021; KFF 2023b). The average health status of the population might have also improved because of the continuous enrollment requirement if healthier people retained Medicaid or CHIP coverage because of the public health emergency. This could also lower observed trends in per-capita use and spending.

For more details on how the composition of the Medicaid population changed from 2014 to 2021, see Appendix Exhibit C.4.

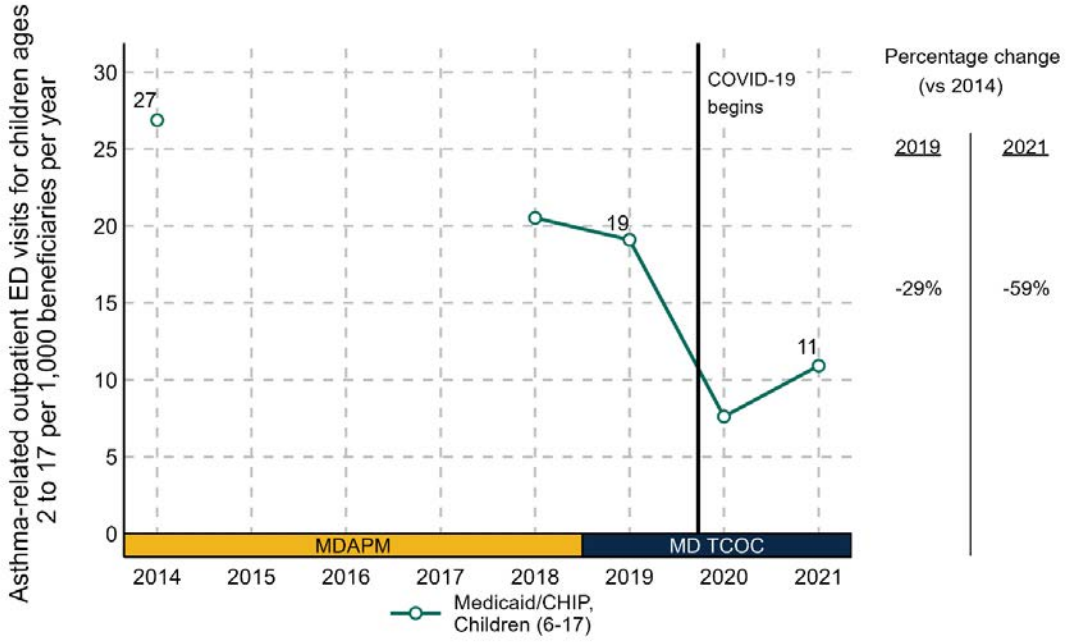
3.4. Statewide trends in outpatient asthma-related ED visits and observation stays and their possible drivers

3.4.1. Trends

Asthma is a common childhood condition associated with high ED use (CDC 2021). It also disproportionately affects children from families with low income, racial and ethnic minorities, and children living in inner cities (CDC 2022), many of whom are covered by Medicaid or CHIP. In SIHIS, Maryland committed to reducing asthma-related visits by about 22% from 2018 to 2023.

Asthma-related outpatient ED visits and observation stays for Medicaid and CHIP-covered children ages 2 to 17 were 59% lower in 2021 than in 2014 and 29% lower in 2019 than in 2014 (Exhibit 3.6). Although the time period for this analysis does not align fully with the SIHIS goal (published in 2020), these trends are generally consistent with it.

Exhibit 3.6. Asthma-related outpatient ED visits and observation stays for Medicaid and CHIP enrollees ages 2 to 17 decreased over time



Notes: (1) Mathematica's analyses of Maryland TAF data; (2) There are no data points for 2015 to 2017 because the diagnosis codes in the Maryland inpatient TAF were unusable in these years; (3) In 2021, the analysis population included N = 551,500 Medicaid and CHIP enrollees ages 2 to 17 years.

CHIP = Children's Health Insurance Program; ED = emergency department; TAF = Transformed Medicaid Statistical Information System Analytic File.

3.4.2. Drivers

The state has directly targeted asthma-related ED visits for children as part of SIHIS, although the trend in declining ED use for asthma predates the MD TCOC period and the development of the SIHIS measures. One way the state noted it has met its milestones in this area is through a local health department asthma home-visiting program that began in 2018 (HSCRC 2023b). The local health department home-visiting program provides up to six home visits for children with moderate to severe asthma by a community health worker or case worker. These visits include an evaluation of environmental triggers; parent education; and provision of supplies shown to reduce asthma severity, including a HEPA vacuum cleaner and other evidence-based interventions. In 2022 (after the data we have available on trends) the local health department home visiting program received increased funding as a result of SIHIS. Specifically, local health departments began receiving patient information from CRISP to allow them to target eligible people (CRISP 2022). The program also expanded to provide services in new jurisdictions and provide additional capacity in existing jurisdictions. Though this recent increase in funding could not have affected trends we observed through 2021, it may lead to future improvements.

Although some of the trends are likely because of preventing the need for care due to better health, this analysis cannot separate declining rates due to prevention versus those from shifting sites of care. For instance, it is possible the model lowered trends in asthma-related ED visits by providing services for acute asthma exacerbations in urgent care centers instead. Finally, decreases in ED visits for asthma during the COVID-19 pandemic period might also be attributable to the reduced exposure to respiratory viruses (these can trigger asthma) from masking and social distancing (Dezman et al. 2021).

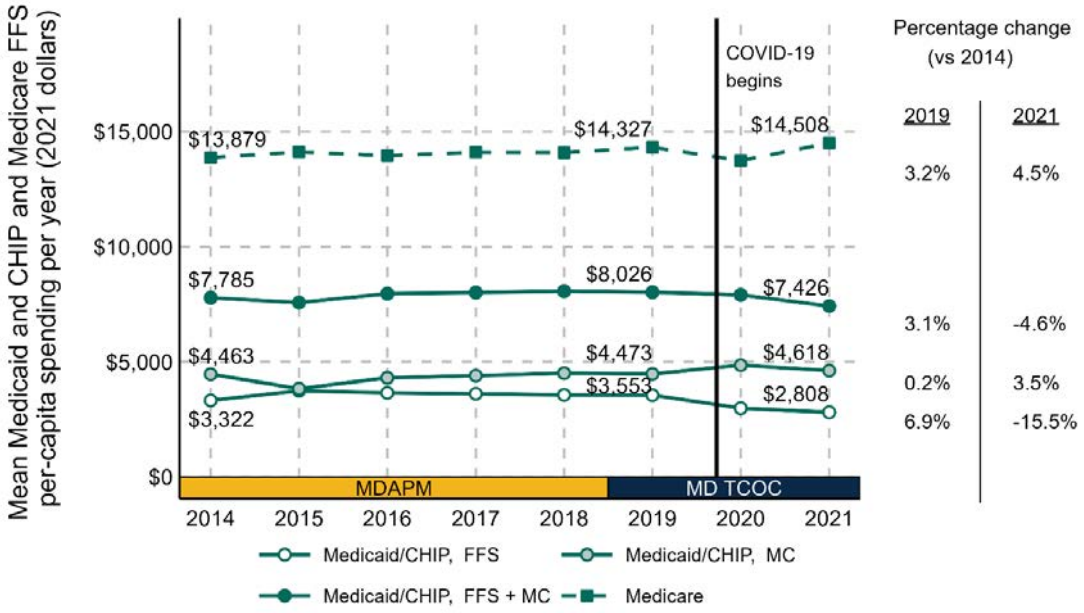
3.5. Statewide trends in per-capita spending and their possible drivers

3.5.1. Trends

Total inflation-adjusted mean Medicaid and CHIP spending per enrollee per year increased modestly through 2019 (3.2%) and decreased through 2021 (4.5%) (Exhibit 3.7).[36] Inflation-adjusted FFS Medicare spending also increased by 3.1% from 2014 to 2019, declined in 2020, and then jumped upward in 2021.

[36] Total Medicaid and CHIP spending includes (1) monthly capitated payments made by the state to Medicaid managed care organizations, (2) FFS payments made by the state for services carved out of managed care plan contracts, and (3) additional payments made to providers (for example, payments above a negotiated rate or lump sum payments for disproportionate care hospitals). We categorize the latter category as FFS spending.

Exhibit 3.7. Inflation-adjusted trends in total spending for Medicaid and CHIP and Medicare FFS beneficiaries in Maryland were largely flat from 2014 to 2020, diverging slightly in 2021



Notes: (1) Mathematica's analyses of Medicare FFS enrollment and inpatient claims and Maryland TAF data; (2) We used the Gross Domestic Product price index to inflate spending from 2014 to 2020 into 2021 dollars. For more information, see https://meps.ahrq.gov/about_meps/Price_Index.shtml; (3) Mathematica's analyses of Medicare FFS enrollment and inpatient claims and Maryland TAF data.

CHIP = Children's Health Insurance Program; FFS = fee for service; MC = managed care; TAF = Transformed Medicaid Statistical Information System Analytic File.

3.5.2. Drivers

Per-capita spending trends for Medicaid are consistent with the MD TCOC Model's goals and incentives, which began under the MDAPM. In the state agreements establishing the MDAPM (2014–2018) and MD TCOC (2019–2026), Maryland committed to keeping all-payer, per-capita hospital spending growth at or below 3.58% (the historical average growth of the state's economy). Therefore, when setting all-payer hospital budgets, HSCRC needed to ensure Medicaid hospital spending did not grow faster than 3.58%. Further, the MDAPM and MD TCOC state agreements included Medicare FFS savings targets: MDAPM targets were for reducing per beneficiary hospital spending and MD TCOC targets were for total Medicare Part A and B spending. Although these savings requirements are for Medicare FFS beneficiaries only, the key mechanism the state has to achieve total Medicare savings is to reduce the growth in all-payer hospital global budgets. As a result, efforts to limit growth in Medicare hospital spending could also limit growth in Medicaid and CHIP hospital spending.

How limits to hospital spending via global budgets mechanically translate into lower spending is largely through limits to what the state pays via capitated payments to managed care plans for services they cover, including hospital care. In Maryland, almost all Medicaid- and CHIP-only enrollees are in managed care. Medicaid sets rates for managed care organizations based on expected payments for different services, including hospital payments, and those hospital payment expectations would be moderated by lowering growth in global budgets over time. As

we discuss in Chapter 2, hospital global budgets have remained relatively flat during this time, which is consistent with the trends in total Medicaid and CHIP spending. Although hospital spending makes up about half of total Medicare spending, it represents a smaller proportion of total Medicaid and CHIP spending. As a result, the connection between total spending in Medicaid and CHIP and HSCRC rate-setting decisions is strong, but it is not as strong as the connection between total spending in Medicare and the HSCRC rate-setting decisions.

Though we were not able to compare our estimated spending trends directly with national Medicaid spending trends, other public data sources suggest that Maryland Medicaid spending growth is slightly lower (8.7%) than spending growth from the rest of the nation (14.3%) during this time period (2014–2019) (CMS 2023b). We interpret these patterns with caution because beneficiaries' characteristics could be changing differently in Maryland and the rest of the country, driving differences in spending—something our trends analysis seeks to correct with regression adjustment. Still, this comparison offers some additional evidence that Maryland Medicaid spending trends are consistent with model incentives and supports that could lead to lower spending.

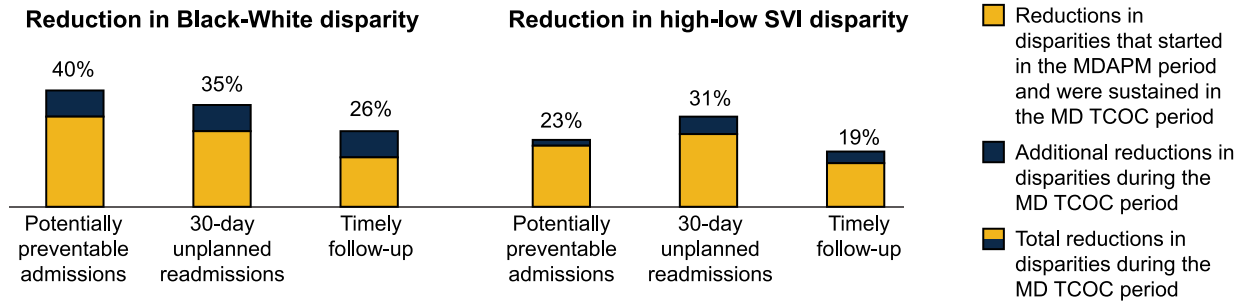
The Medicare and Medicaid trends diverge slightly in 2021 because of model and non-model factors. First, Medicare spending increased in 2021 in large part because of increases in non-hospital spending, including payments made to Maryland Primary Care Program practices. At the same time, Medicaid spending, particularly FFS spending, trended downward during this time likely because of lower use of nursing homes and related institutional care for those with long-term services and supports or behavioral health needs during the COVID-19 pandemic (which are paid for outside of global budgets).

Chapter 4. Effects of the Maryland Model on Health Equity for Medicare Fee-For-Service Beneficiaries

Key findings

- During the MD TCOC period, the model reduced disparities between Black and White beneficiaries in potentially preventable admissions, 30-day unplanned readmissions, and timely follow-up by as much as 40% (Exhibit 4.1).
- The model also reduced disparities between beneficiaries living in areas with high and low Social Vulnerability Index scores in potentially preventable admissions, 30-day unplanned readmissions, and timely follow-up—up to 31% through the MD TCOC period.
- Much like the statewide analysis, some of the improvement in outcomes—including potentially preventable admissions and 30-day unplanned readmissions—likely reflects shifts in sites of care. Specifically, as much as half of the reduction in potentially preventable admission and 30-day unplanned readmission disparities could be attributable to hospitals sending patients to observation or the community rather than admitting them from the emergency department.
- CMS and Maryland have recently (2020 to 2022) introduced model incentives and supports that explicitly aim to improve equity. Yet much of the reductions in disparities (more than two-thirds) occurred before the model purposefully aimed to reduce those disparities, so these impacts could be a result of external influences independent of the direct model incentivization.
- Model incentives and supports not explicitly tied to equity, particularly the quality-adjusted global budgets, likely contributed to reducing disparities. For example, in response to the quality-adjusted global budget, hospitals implemented programs to improve quality for all beneficiaries, which likely affected Black beneficiaries more because this group had greater opportunity for improvement at the start of the model.
- Most hospitals surveyed in 2021 were investing in efforts to make health outcomes more equitable, although these efforts were not necessarily motivated by model incentives or supports.

Exhibit 4.1. During the MD TCOC period (2019 to 2022), the model reduced disparities in quality-of-care measures, largely by sustaining reductions that started during the MDAPM period



Notes: (1) Percentage reductions in disparities are relative to what we estimate the rates would have been during the late MDAPM period (2017 to 2018) or the MD TCOC period (2019 to 2022) in the absence of the model. (2) All reductions in disparities were statistically significant at $p < 0.05$.

SVI = Social Vulnerability Index.

In this chapter, we estimate whether the model improved health equity by reducing disparities, or gaps, in quality of care for groups that have been historically marginalized (see Box 4.A). The historically marginalized groups are based on (1) race, comparing non-Hispanic Black and non-Hispanic White beneficiaries, and (2) place, comparing beneficiaries living in areas with high and low Social Vulnerability Index (SVI) scores. SVI is a community-level measure of social conditions that increase the risk of suffering in the event of a disaster.

Box 4.A. Quality-of-care measures

We examine effects of the model on disparities within:

1. Potentially preventable admissions
2. 30-day post-discharge unplanned readmissions
3. Timely follow-up after an acute exacerbation of a chronic condition ◢

The model could, logically, improve quality-of-care measures more for historically marginalized groups for three reasons (Exhibit 4.2). First, starting in 2020, the model has explicitly aimed to reduce disparities in 30-day unplanned readmissions through the Statewide Integrated Health Improvement Strategy (HSCRC 2020a). Second, changes to the Maryland Primary Care Program (MDPCP) in 2022 targeted socioeconomically disadvantaged communities. Third, even during periods when the model did not explicitly aim to reduce disparities, the model's overall incentives and supports might have encouraged providers to do so. The first two reasons occurred recently and therefore may take more time to effect impact estimates.

Exhibit 4.2. Aspects of the model that could logically improve quality of care for historically marginalized groups

Aspects of the model	Description
The Statewide Integrated Health Improvement Strategy	The Statewide Integrated Health Improvement Strategy set goals to reduce disparities in 2020, which materialized into incentive payments to hospitals for reducing within-hospital disparities in 30-day unplanned readmissions in 2022 after a delay because of the COVID-19 pandemic. In addition, through the Statewide Integrated Health Improvement Strategy, Maryland (1) established a statewide commission in 2021 to implement policies and laws that reduce health disparities, (2) designated new funding in 2022 designed in part to reduce health disparities and emphasize health related social needs, and (3) began collecting data from hospitals to report on statewide health disparities (HSCRC 2023b).
MDPCP	MDPCP started in 2019 and provides funding and support for the delivery of advanced primary care (see Chapter 5). In 2021, CMS opened MDPCP participation to Federally Qualified Health Centers and, in 2022, created HEART payments, which support MDPCP practices serving socioeconomically disadvantaged populations.
Overall model incentives and supports	The model's overall incentives and supports could reduce disparities even without explicit incentives through, for example, providers targeting new care management services to beneficiaries at higher risk of preventable hospital use, whose risk might be attributable in part to historical marginalization and gaps in care.

HEART = Health Equity Advancement Resource and Transformation

We chose quality of care–oriented measures as opposed to pure service use or spending measures because it is not always clear whether reductions in the number or intensity of health care services for historically marginalized groups represents improvement. Historically marginalized groups disproportionately experience barriers to accessing care, so reductions in health care use could represent exacerbations of these existing access disparities rather than improvements. Although all the measures we chose focus on quality, potentially preventable admissions and readmissions also reflect, to some degree, changes in service use, so reductions in these measures for historically marginalized groups could possibly represent either gains or harms.

Reductions in potentially preventable admissions and 30-day unplanned readmissions could also reflect hospital choices regarding patients' site of care that are less directly tied to quality. For example, reductions reflect the choice between admitting patients as inpatients or treating them in the hospital as an outpatient under the observation designation. We examine shifts in the site of care further in the call-out boxes below.

4.1. Subgroups and methods for estimating effects on disparities in quality of care

4.1.1. Subgroups

Together with CMS, we chose historically marginalized subgroups that align with the Innovation Center's goals to advance health equity, and which had substantial quality gaps at baseline (see Box 4.B and Appendix D.2.1). We chose definitions of subgroups that allowed for a strong and meaningful contrast between the groups. We chose these definitions before finalizing the comparison group matching process to ensure that, within the subgroups of interest, the comparison group had similar characteristics to Maryland beneficiaries (see Appendix D.2.2).

Box 4.B. Gaps at baseline (2011 to 2013)

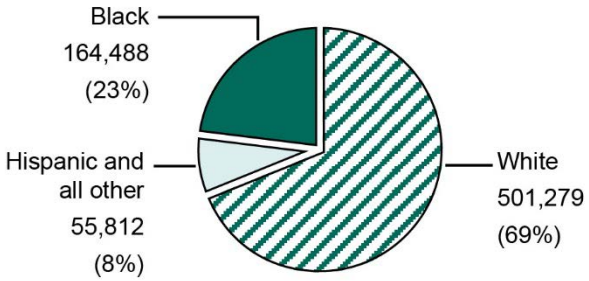
	Black relative to White race	High relative to low Social Vulnerability Index score
Potentially preventable admissions	54% higher	85% higher
30-day unplanned readmissions	30% higher	29% higher
Timely follow-up	16% lower	13% lower

Note: All gaps were unfavorable (higher admissions or readmissions rates and lower follow-up rates) for Black beneficiaries and beneficiaries with high Social Vulnerability Index scores. ◢

4.1.1a. Race

To ensure adequate statistical power and clear interpretation of results, we included non-Hispanic Black (including African American) and non-Hispanic White beneficiaries in the analysis, excluding all other races and ethnicities. Other racial and ethnic groups make up a relatively small portion of the Maryland Medicare population (less than 10%, Exhibit 4.3).

Exhibit 4.3. Black beneficiaries make up almost one-quarter of Maryland's Medicare fee-for-service population, 2022



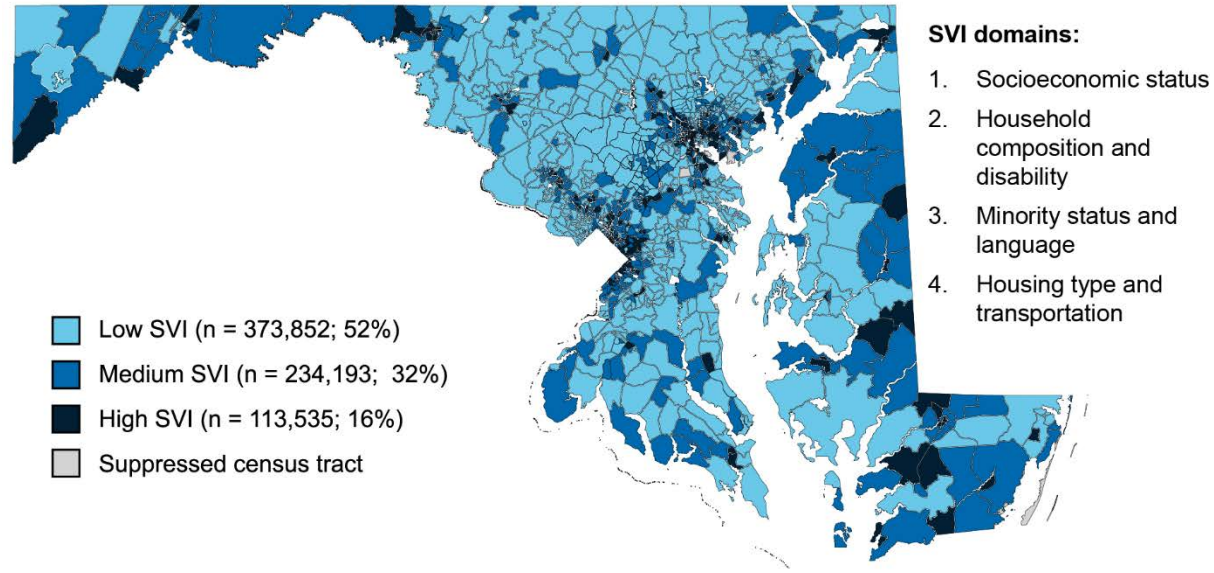
Note: Black and White categories exclude beneficiaries of Hispanic descent.

4.1.1b. Place

We used the Center for Disease Control and Prevention's SVI to distinguish disparities by place. SVI measures a community's vulnerability to human suffering and financial loss in a disaster (GRASP n.d.), with higher scores indicating greater vulnerability. SVI assigns a national percentile ranking to each census tract based on where it falls on a continuum across four broad domains (Exhibit 4.4). Based on these national percentiles, we divided Maryland and comparison regions into three groups (or tertiles). On average, Maryland has lower SVI scores (that is, less vulnerable) than the nation does; therefore, less than one-third of Maryland beneficiaries live in high SVI areas (Exhibit 4.4). In our analysis, to improve the contrast of high versus low vulnerability, we compared only the top tertile highest SVI with the bottom tertile lowest SVI, excluding the middle tertile. We chose SVI over other area-based measures for this analysis for two reasons. First, SVI captures many dimensions of vulnerability, with granular domain scores that could allow for deeper investigation of effects by place in future reports. Second, we matched on individual SVI components in developing the comparison group which led to good balance on SVI between Maryland and our comparison group (see Appendix D.1.1).[37]

[37] We matched on components of the SVI such as the percentage with a high school degree, in part, to reduce the risk of bias that could stem from differences in how the COVID-19 pandemic affected outcomes in Maryland versus the comparison group. As a result, Maryland and the matched comparison groups have similar characteristics on the components of SVI, which then also facilitates estimating impacts by subgroups defined by SVI summary score.

Exhibit 4.4. High SVI areas are distributed across the state of Maryland



Source: 2018 CDC/ATSDR SVI mapped to 2010 census tracts.

Note: Sample sizes in legend are counts of beneficiaries in 2022.

ATSDR = Agency for Toxic Substances and Disease Registry; CDC = Centers for Disease Control and Prevention; SVI = Social Vulnerability Index

4.1.2. Methods for estimating effects on disparities in quality of care

To estimate impacts of the model on gaps in quality, we used the same core design and matched comparison group as we described in Chapter 2. In our regression models, we added interaction terms that allowed us to estimate impacts for each subgroup (for example, impacts for Black beneficiaries) and the differences in impacts between subgroups (for example, differences between Black and White beneficiaries) relative to the baseline period (2011 to 2013). See Appendix D.3 for details about the regression approach. To translate these impact estimates into changes in quality gaps, we first identified the observed (unadjusted) means for the three quality measures in each subgroup during the early Maryland All-Payer Model (MDAPM) period (2014 to 2016), the late MDAPM period (2017 to 2018), and the MD TCOC period (2019 to 2022). We then projected what these means would have been in the absence of the model. We did this by taking the observed means for Maryland beneficiaries during the model period and subtracting the impact of the model for Maryland beneficiaries in that subgroup. Those impact estimates came from regression models that estimate the impact of the model using our comparison group, separately for each subgroup (see Section 4.2.1a for a specific example using potentially preventable admissions). Calculating the difference in the observed rates and the projected rates by subgroup allows us to estimate the actual and (percentage) reduction in gaps due to the model.

4.2. Effects on disparities in quality of care by race and their possible drivers

Similar to what we did for statewide impacts (see Chapter 2), we interpret effects of the Maryland Model (referred to throughout as 'the model') as the difference between the outcomes that occurred in Maryland and what we estimate would have occurred if Maryland and CMS had not introduced any of the changes they did since 2014. This means that model effects in 2019,

for example, represent the combined effects of all the changes that CMS and Maryland have made since 2014, including any changes that affect disparities in quality-related measures. Similarly, model reductions in disparities in 2019 represent the combined effects of all changes since 2014 on disparities.

4.2.1. Effects

4.2.1a. During the MD TCOC period

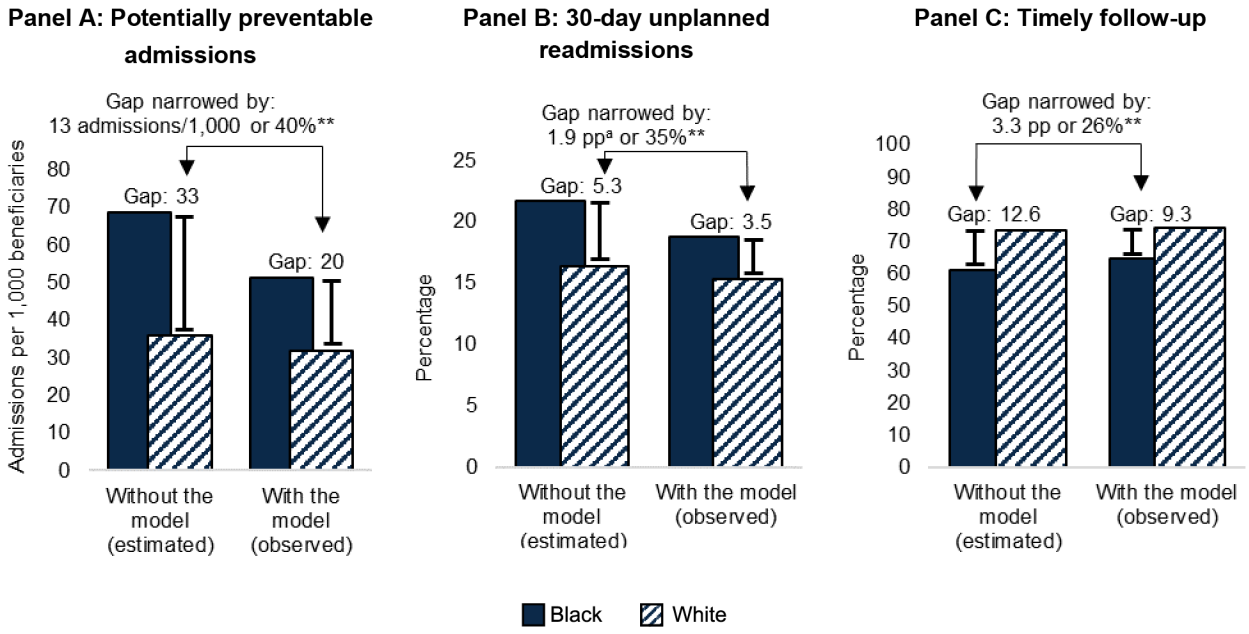
Through the first four years of the MD TCOC period (2019 to 2022), gaps between Black and White beneficiaries narrowed substantially for all three quality outcomes (Exhibit 4.5).

- The model narrowed the gap in potentially preventable admissions by 13 admissions per 1,000 (90% confidence interval [CI]: 10, 16), or 40% (Exhibit 4.5, panel A).
  - To calculate this change in the gap, we first observed that, during the MD TCOC period, Black beneficiaries in Maryland had on average 52 potentially preventable admissions per 1,000 beneficiaries compared with 32 for White beneficiaries— a gap of 20 admissions.
  - We next estimated, using our regression models for impact, that the model decreased preventable admissions for Black and White beneficiaries, but it did so by a greater amount for Black beneficiaries (17 compared with four admissions per 1,000).
  - Therefore, we estimated the Black–White gap would have been 33 admissions per 1,000 in the absence of the model, which is 13 admissions higher than the 20 admissions observed.[38]
- The model narrowed the gap in 30-day unplanned readmissions by 1.9 percentage points (90% CI: 1.4, 2.3) or 35% (Exhibit 4.5, panel B).
- The model narrowed the gap in timely follow-up by 3.3 percentage points or 26% (90% CI: 2.3, 4.2) (Exhibit 4.5, panel C).
  - In fact, the model had no impact on timely follow-up for White beneficiaries, implying that all the statewide impacts for timely follow-up reported in Chapter 2 were entirely concentrated among Black beneficiaries (see Appendix Exhibit D.8).

Even with these reductions in quality gaps, substantial disparities remained: a gap of 20 admissions per 1,000 beneficiaries in potentially preventable admissions, of 3.5 percentage points in 30-day unplanned readmissions, and of 9.3 percentage points in timely follow-up (Exhibit 4.5). These gaps are, however, much smaller than they were at baseline (2011 to 2013) prior to both the MD TCOC model and the MDAPM: a gap of 30 admissions per 1,000 beneficiaries in potentially preventable admissions, 5.3 percentage points in 30-day unplanned readmissions, and 11.3 percentage points in timely follow-up (see Appendix Exhibit D.4).

[38] This estimated gap of 33 admissions per 1,000 beneficiaries in the absence of the model can be calculated as ([52 - (-17)] – [32 - (-4)]).

Exhibit 4.5. The model narrowed the Black–White gap in quality-of-care measures in the MD TCOC period (2019 to 2022)



Notes: (1) Panel A shows the observed (actual, unadjusted) average yearly potentially preventable admission rate for Black and White beneficiaries from 2019 to 2022 and the difference, or gap, between the groups. It also shows estimates of what the rates would be for Black and White beneficiaries—and the gap between them—in the absence of the model, with the rate within each racial subgroup calculated as the difference between the observed rate for that group and the impact estimate for that group. The narrowing of the gap is the difference between the observed and the estimated gaps. Panels B and C show the same statistics but for 30-day unplanned readmissions and timely follow-up, respectively. (2) The impact estimates and the *p*-values for each subgroup are shown in Appendix D.

[a] The difference in gaps was calculated before rounding as 5.348 – 3.496 = 1.852, or 1.9 after rounding

* $p < 0.10$; ** $p < 0.05$ for the test that the model narrowed the disparity gap in the outcome.

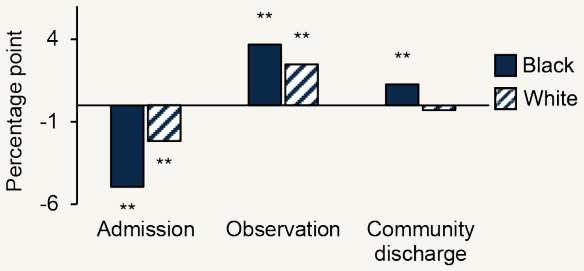
pp = percentage points.

Box 4.C. Shifts in the site of care by race

Shifts in sites of care, away from inpatient admissions and toward observation stays or community discharge, could reduce gaps in potentially preventable admissions and 30-day unplanned readmissions without necessarily improving quality. We estimate that these shifts could explain up to half the observed reductions in Black–White gaps.

- The model increased observation stays by around 50% more for Black beneficiaries than for White beneficiaries (Exhibit 4.6).
- The model also increased the likelihood of sending Black beneficiaries to the community from the emergency department without an increase for White beneficiaries.
- These shifts in the site of care could explain about 43% of the differences by race in impacts on all-cause admissions, which includes potentially preventable admissions and 30-day unplanned readmissions (see Appendix Exhibit D.14).

Exhibit 4.6. The model decreased hospital admissions and increased observation stays and community discharges more for Black than for White beneficiaries, 2019 to 2022



Note: Impacts are percentage point changes in the probability of being (a) admitted to a hospital, (b) sent to observation, or (c) discharged to the community from the emergency department

* $p < 0.10$; ** $p < 0.05$.

- This analysis is exploratory and requires additional investigation. As we found for all beneficiaries in Section 2.4.1, Black and White beneficiaries had a steeper rise in observation use in Maryland than the comparison group during the baseline period. These diverging trends suggest that some, or all, of the continued divergence during the model could be unrelated to model effects.
- Nationally, a recent study suggests that substitutions of admissions with observation stays explain most of the reductions in racial disparities in preventable hospital admissions in the last few years (Figueroa et al. 2020), which is consistent with our finding.
- As we describe in Chapter 2, shifts in the site of care could represent a mixture of harms and benefits to the beneficiary. Observation stays can increase beneficiary cost-sharing and limit choices for post-discharge care (Cichowitz et al. 2021).[39] Community discharges could also be harmful if they reflect less access to necessary hospital care. On the other hand, community discharges could improve beneficiaries' experience because they typically prefer to receive care at home. Further, hospitals' (see Chapter 2) and MDPCP's (see Chapter 5) efforts to improve discharge planning, timely follow-up after discharge, and care coordination with post-acute care might also help to alleviate potential harms to health that might otherwise occur from not being admitted. ◢

[39] An increase in observation stays and discharges home could reflect a decrease in the severity of patients that present to the emergency department and are evaluated for an admission. However, our analysis adjusted for claims-based measures of severity, so model-related improvements in the severity of patients who present to the ED are unlikely to explain the findings.

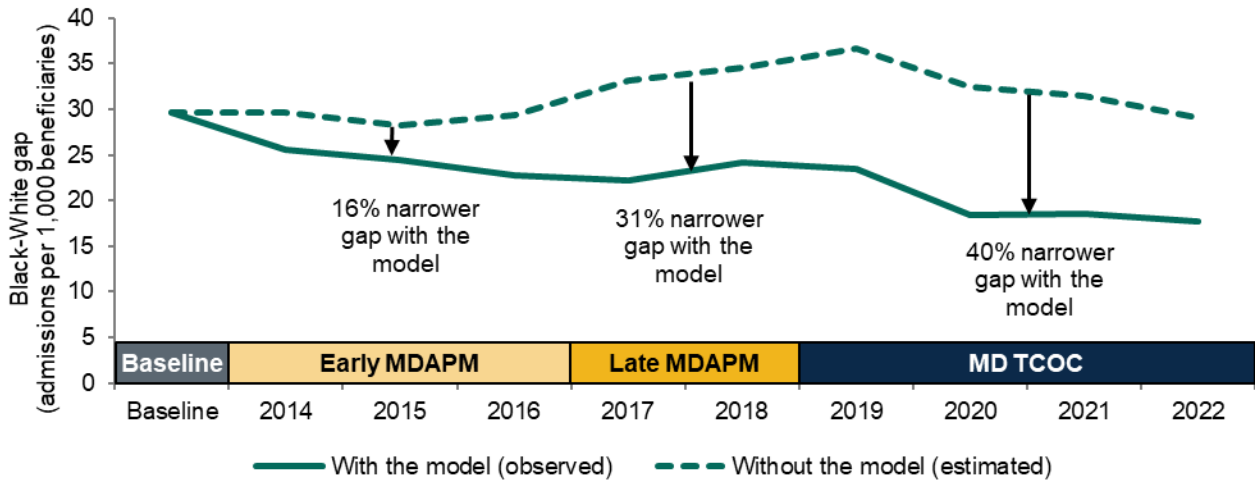
4.2.1b. Changes over time

For all three quality outcomes, Black–White gaps narrowed before the MD TCOC period, with a substantial portion of the reductions occurring by the late MDAPM period (2017 to 2018). Using potentially preventable admissions as an example:

- Reductions in the gap during the MDAPM period accounted for 82% of the total reduction achieved through the MD TCOC period.
  - Gaps narrowed by 10.6 admissions per 1,000 (90% CI: 8.1, 13.1), or 31% through the late MDAPM period (Exhibit 4.7).
  - These gaps narrowed by an additional 2.4 admissions per 1,000 (90% CI: 0.6, 4.1) during the MD TCOC period for a total of 13.0 admissions per 1,000, or 40%.

We observed similar results for the other two quality outcomes, with reductions during the MDAPM period accounting for 74% and 67% of the total reductions for 30-day unplanned readmissions and timely follow-up, respectively (see Appendix D.4.2).

Exhibit 4.7. Most of the narrowing of Black–White gaps in potentially preventable admissions observed during the Maryland Model occurred during the MDAPM period



Notes: (1) This figure shows the observed (actual, unadjusted) difference, or gap, in rates of potentially preventable admissions for Black and White beneficiaries in Maryland as the black solid line. It also shows what we estimate the Black–White gap would have been in the absence of the Maryland Model (dashed line). (2) To calculate the estimated gap, we first estimated the potentially preventable admission rate for each racial group in each year (equal to the unadjusted rate for that year minus the impact estimate for that year). We then took the difference of those estimated rates for Black and White beneficiaries in each year.

4.2.2. Drivers

Most of the care changes leading to reductions in disparities emerged during the MDAPM period, likely in response to quality-adjusted global budgets. In addition, shifts in care might have played a meaningful role in narrowing the quality gap as more Black beneficiaries were sent to observation than White beneficiaries were during the MDAPM and MD TCOC periods. The timing also suggests that new model incentives that target equity have likely not played an important role to date, although they could in the future.

Shifts in care affecting the quality gap

As we discuss in Chapter 2, global budgets provide a strong incentive for hospitals to reduce preventable hospital use and shift care to lower-acuity settings. The latter includes shifting admissions to observation status (which are typically seen as a less intensive way to monitor patients than an inpatient admission) or community discharge. In addition, the quality adjustments to global budgets include both 30-day unplanned readmissions and potentially preventable admissions. By moving a patient who would have otherwise been admitted to an observation stay, hospitals can avoid having that stay count against them for performance measurement purposes. As described previously, shifts to observation stay or community discharge could explain about 40% of the differences by race in impacts on all-cause admissions, but it has unclear implications for quality of care (see Box 4.C).

Hospital programs affecting the quality gap

The remaining impacts are likely attributable to hospital programs implemented in response to quality-adjusted global budgets to reduce preventable hospital use—sometimes through improvements in timely follow-up. In all, 82% of hospitals reported investing "a lot" of staff, infrastructure, or other resources toward reducing preventable hospital use. Hospital programs designed to reduce preventable hospital use and improve timely follow-up likely narrowed the quality gap between Black and White beneficiaries even if they were not specifically designed with that intention (Exhibit 4.8). This narrowing of the quality gap could have occurred via three pathways: (1) programs that aim to improve quality for all beneficiaries, (2) programs that aim to improve quality for beneficiaries at higher risk of poor outcomes, and (3) hospitals' efforts that directly focus on race.

Exhibit 4.8. How the Maryland Model could have narrowed the quality gap between Black and White beneficiaries

Program goal	How it might narrow the quality gap
Improve quality for all beneficiaries	This could affect Black beneficiaries more because they had higher rates of hospital use at the start of the model.
Improve quality for beneficiaries at higher risk of poor outcomes	This could affect Black beneficiaries more if they were more likely to meet the criteria for targeted interventions.
Hospital efforts that directly target race	This could target known disparities and could work synergistically with other model efforts.

Programs that aim to improve quality for beneficiaries at higher risk of poor outcomes. Because Black beneficiaries are at higher risk of certain chronic conditions[40] and experience worse rates of the three quality outcomes we studied than White beneficiaries, programs that focus on high-risk beneficiaries could indirectly target Black beneficiaries. For example, during site visits, virtually all hospitals described some form of enhanced discharge planning for patients identified as having a high risk of a readmission. These programs generally begin by identifying the target population and then include some or all of the following: transition planning, medication management, patient education, and a plan for follow-up care. Hospitals used a range of tools to identify which patients are at highest risk of readmission. One hospital used Project BOOST to prevent readmission, which uses the "8ps screen tool" to identify patients at highest risk (BOOST n.d.). This tool identifies patients with a principal diagnosis of cancer, stroke, diabetes, chronic obstructive pulmonary disease, or heart failure as particularly high risk. Several of these conditions are more prevalent among Black beneficiaries because of past inequities, so hospitals using the tool would inadvertently be more likely to focus enhanced discharge planning efforts on Black beneficiaries. Enhanced discharge planning is designed to reduce readmissions and improve timely follow-up.

Programs that aim to improve quality for all beneficiaries. Hospital quality programs could improve outcomes for Black beneficiaries more than White beneficiaries simply because Black beneficiaries experienced higher rates of hospital use at the start of the model. For example, several hospitals reported implementing some form of daily rounding with a multidisciplinary focus to help ensure a smooth hospital discharge. During daily rounds, care providers such as physicians, nurses, pharmacists, and care managers meet to discuss the plan for the day and what they need to discharge each patient safely. In some cases, daily rounding included checklists of issues tied to quality metrics, such as reducing the risk of infections, which is commonly associated with readmissions. Although the hospital might provide multidisciplinary rounding to all patients—and it could be equally effective in reducing readmissions for all patients on a relative scale—such interventions could reduce the *absolute* risk of readmission more for Black beneficiaries. This would occur because, due to historical inequities, Black beneficiaries on average have a higher risk of readmission, so the same relative effect translates into a larger absolute effect.[41]

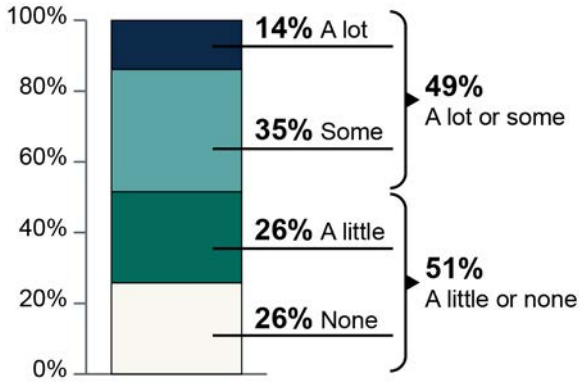
[40] For example, Black beneficiaries in Maryland in 2013 had a greater burden of costly chronic conditions, as measured by CMS's Hierarchical Condition Category scores, which use medical diagnoses to predict Medicare costs (1.34 for Black beneficiaries compared with 1.05 for White beneficiaries— with a score of 1 representing the average Hierarchical Condition Category score in the national Medicare population; see Appendix Exhibit D.6). Black beneficiaries also had higher rates of some specific chronic conditions included in the Hierarchical Condition Category scores, such as hypertension and chronic obstructive pulmonary disease.

[41] For example, multidisciplinary rounding could, in theory, reduce the risk of readmissions by 5% among all patients admitted to the hospital. This uniform relative effect could reduce the absolute risk of readmissions by 1.2 percentage points for Black beneficiaries (5% impact times the baseline readmission rate of 24%) and 0.8 percentage points for White beneficiaries (5% times the baseline readmission rate of 16%). As a result, interdisciplinary rounding could have a 40% larger absolute effect (1.2 versus 0.8 percentage points) for Black beneficiaries than White beneficiaries, given baseline differences in risk.

Hospital efforts that directly target race. In our hospital survey, 68% of respondents reported investing a lot in efforts to make health outcomes more equitable, although less than half believed those efforts were motivated by the MD TCOC model incentives or supports (Exhibit 4.9). The most prominent examples from our data of the activities that hospitals were pursing to improve racial equity in health outcomes include the following:

- Efforts to analyze data by race, including developing dashboards to visualize data by race
- Initiatives to launch improvement projects with specific change tactics identified to close the quality gap, such as unconscious bias training
- The addition of new staff or roles to advance health equity work in their organizations, such as chief equity officers

Exhibit 4.9. About half of hospitals took actions to improve health equity because of the MD TCOC model incentives or supports



Source: Mathematica's analysis of data from our hospital survey.

Note: N = 43. The survey question was: "To what extent are the actions your hospital is taking to improve equity in health outcomes encouraged by the incentives and supports provided by the MD TCOC Model?"

Even if these individual efforts were not directly incentivized by the model, they could have worked synergistically with other efforts that hospitals were pursuing in response to model incentives. Maryland hospitals are highly financially motivated to reduce preventable hospital use, and many hospitals— in Maryland (HSCRC 2020a) and across the nation (Joint Commission 2022)— are also committed to reducing disparities as part of their broader mission. Hospitals could leverage their resources and experience to reduce preventable hospital use to further work to address disparities. During site visits, hospitals emphasized that care changes are not solely a response to the model's incentives and supports; care delivery programs require both financial incentives and support as well as alignment with the hospital's mission.

4.3. Effects on disparities in quality of care by place and their possible drivers

4.3.1. Effects

4.3.1a. During the MD TCOC period

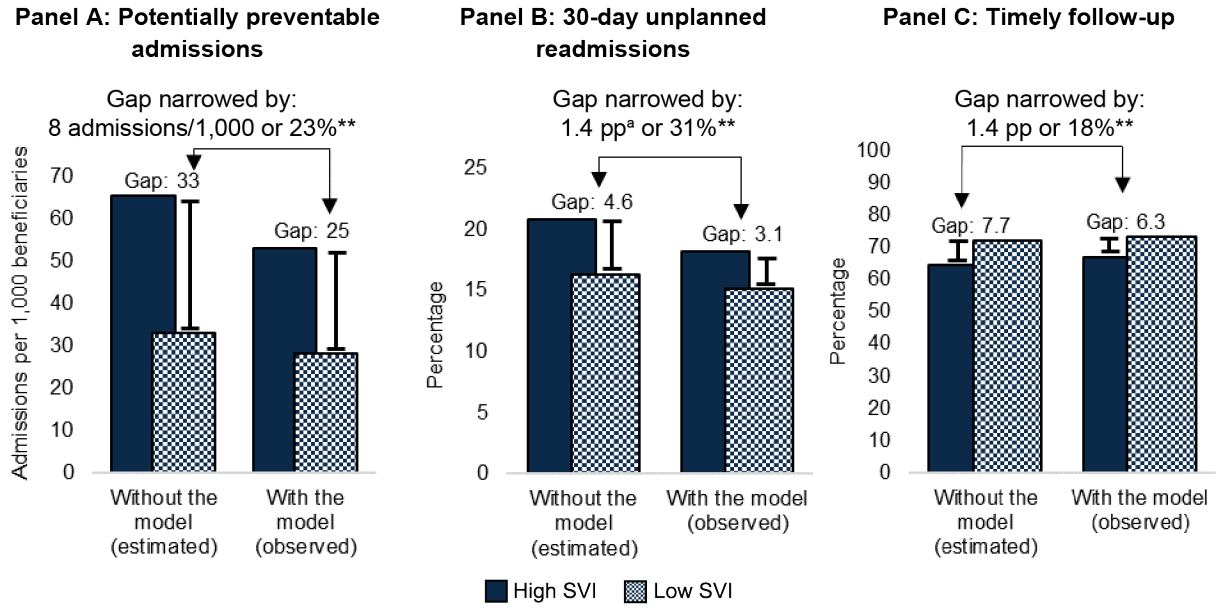
Gaps between beneficiaries living in high and low SVI areas narrowed substantially for all three quality outcomes (Exhibit 4.10) from baseline through 2022.

- The model narrowed the gap in potentially preventable admissions by 8 admissions per 1,000
- (90% CI: 4; 11), or 23%.

- For 30-day unplanned readmissions, the model narrowed the gap by 1.4 percentage points (90% CI: 0.8; 2.1), or 31%.
- For timely follow-up, the model narrowed the gap by 1.4 percentage points (90% CI: 0.3; 2.6), or 19%.

Even with these reductions in quality gaps, substantial disparities remained: a gap of 25 admissions per 1,000 beneficiaries in potentially preventable admissions, 3.1 percentage points in 30-day unplanned readmissions, and 6.3 percentage points in timely follow-up (Exhibit 4.10). These gaps are, however, much smaller than they were at baseline (2011–2013) before the model: a gap of 41 admissions per 1,000 beneficiaries in potentially preventable admissions, 5.0 percentage points in 30-day unplanned readmissions, and 8.7 percentage points in timely follow-up (see Appendix Exhibit D.5).

Exhibit 4.10. The model narrowed the high–low SVI gap in quality-of-care measures in the MD TCOC period (2019 to 2022)



\Notes: (1) Panel A shows the observed (actual, unadjusted) average yearly potentially preventable admission rate for beneficiaries with high and low SVI scores from 2019 to 2022 and the difference, or gap, between the groups. It also shows estimates of what the rates would be for beneficiaries with high and low SVI scores—and the gap between them—in the absence of the model, with the rate within each group calculated as the difference between the observed rate for that group and the impact estimate for that group. The narrowing of the gap is the difference between the observed and the estimated gaps. Panels B and C show the same statistics but for 30-day unplanned readmissions and timely follow-up, respectively. (2) The impact estimates and the *p*-values for each subgroup are shown in Appendix D.

[a] The difference in gaps was calculated before rounding as 4.552 – 3.137 = 1.416, or 1.4 after rounding

* $p < 0.10$; ** $p < 0.05$ for the test that the model narrowed the disparity gap in the outcome.

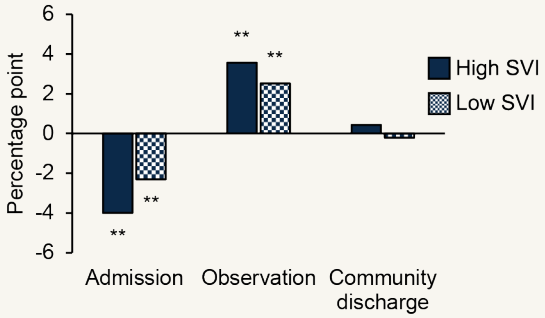
pp = percentage points; SVI = Social Vulnerability Index.

Box 4.D. Shifts in the site of care by place

We estimate that shifts from inpatient admissions to observation stays, which grew at a greater rate for beneficiaries living in high SVI areas, could explain up to half the reductions in high–low SVI gaps for potentially preventable admissions and 30-day unplanned readmissions.

- The model increased observation stays by around 50% more for beneficiaries living in areas with high, relative to low, SVI scores (Exhibit 4.11).
- Unlike in the findings for Black beneficiaries, the model did not change the likelihood of discharging beneficiaries to the community from the emergency department in areas with either high or low SVI scores.
- This shift toward observation stays could explain about 40% of the differences in impacts by place on all-cause admissions, which includes potentially preventable admissions and 30-day unplanned readmissions (see Appendix Exhibit D.14). ◢

Exhibit 4.11. The model decreased hospital admissions and increased observation stays more for beneficiaries living in areas with high SVI scores, 2019 to 2022



Note: Impacts are percentage point changes in the probability of being (a) admitted to a hospital, (b) sent to observation, or (c) discharged to the community from the emergency room.

* p <0.10; ** p < 0.05.

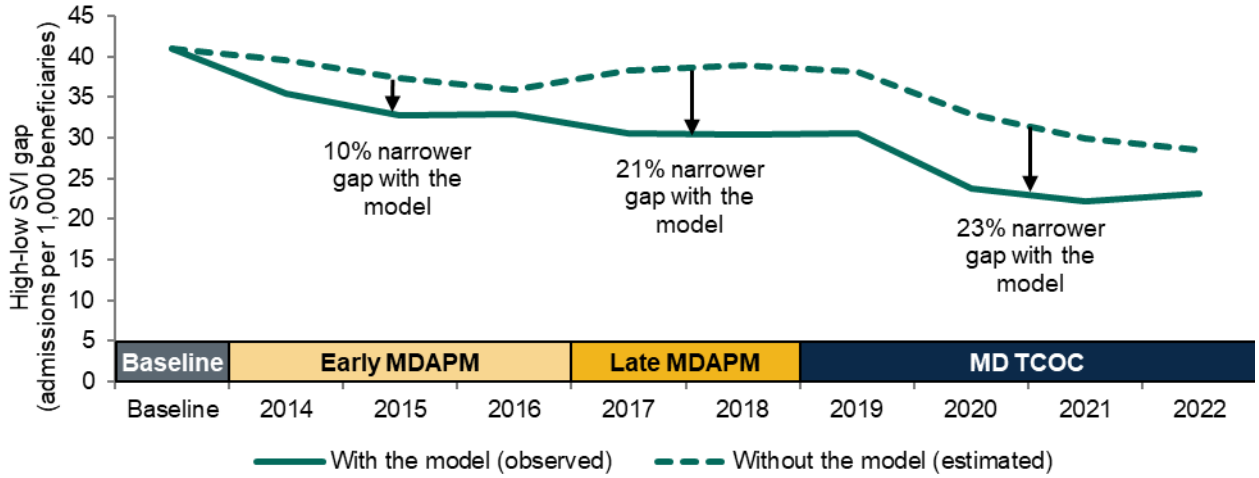
SVI = Social Vulnerability Index.

4.3.1a. Changes over time

For all three quality outcomes, most of the narrowing of gaps occurred before the MD TCOC period—by the late MDAPM period.

- Reductions in the gap for potentially preventable admissions during the MDAPM period accounted for nearly all reductions achieved through the MD TCOC period (Exhibit 4.12).
- Reductions during the MDAPM period accounted for 86% of the total reductions for both 30-day unplanned readmissions and timely follow-up (see Appendix D.4.2).

Exhibit 4.12. Most of the narrowing of gaps of high–low SVI for potentially preventable admissions observed during the Maryland Model occurred during the MDAPM



Notes: (1) This figure shows the observed (actual, unadjusted) difference, or gap, in rates of potentially preventable admissions for beneficiaries with high and low SVI scores in Maryland as the black solid line. It also shows what we estimate the gap between beneficiaries with high and low SVI scores would have been in the absence of the Maryland Model (dashed line). (2) To calculate the estimated gap, we first estimated the potentially preventable admission rate for each group in each year (equal to the unadjusted rate for that year minus the impact estimate for that year). We then took the difference of those estimated rates for beneficiaries with high and low SVI scores in each year.

SVI = Social Vulnerability Index.

4.3.2. Drivers

The narrowing of gaps by place occurred almost entirely during the MDAPM period, before the start of new model incentives that were targeted based on geography. These include the Health Equity Advancement Resource and Transformation Payment (HEART) payments for MDPCP practices, which began in 2022 and focus on high-risk, high-needs MDPCP beneficiaries (see Box 4.E). [42]

Many of the same drivers of gap closures by race could also affect gaps by place because there is substantial overlap between race and place. For example, Black beneficiaries comprise 47% of the population in areas with high SVI scores in Maryland but only 13% of the population in areas with low SVI scores (see Appendix Exhibit D.2). As a result, hospital programs implemented in response to the quality-

Box 4.E. How practices are using HEART payments

- HEART payments provide extra resources to practices to care for beneficiaries who have high social and medical risk.
- In 2022, the first year the payments were offered, practices reported using them to pay for staff, nutrition resources, transportation to medical appointments, and equipment and supplies not covered by Medicare.
- As we discuss in Chapter 5, however, practices expressed frustration with the restrictions on how they can use HEART payments, which made it difficult for practices to use HEART payments in ways they thought could actually improve the care they provided. ◢

[42] HEART payments are based, in part, on the Area Deprivation Index, which is a similar area-level measure of social risk as the SVI and uses the same underlying data (the American Community Survey). Appendix D.1.1 contains a detailed description of the SVI and Area Deprivation Index and our decisions to use the SVI in these analyses.

adjusted global budgets, which improved the quality of care for all beneficiaries or targeted beneficiaries at higher risk of poor outcomes, could have had an outsized influence on beneficiaries living in areas with high SVI scores who experienced greater historic inequities in care. Shifts in care, particularly shifts to observation stays, could have also played a meaningful role in narrowing the quality gap (see Box 4.D).

In addition, hospitals could have narrowed disparities by SVI by providing additional health care services in places of need or by addressing health-related social needs that have a geographic element linked to domains captured in the SVI. Global budgets encourage hospitals to invest in additional health care services in places of need and improve health-related social needs because doing so can reduce preventable hospital use. In our site visits, one hospital noted that the model "does give us incentives to do these kind[s] of collective, big investments in social determinants of health issues, that don't exist elsewhere." Furthermore, the substantial revenue that hospitals kept from reducing volume within fixed budgets free up some resources that the hospital could use to fund these programs even if doing so does not lead to short-term reductions in hospital use. That is, at least some efforts to provide health care services in places of need or address health-related social needs described by hospitals in our site visits were either prompted by the global budget incentives to reduce volume and or facilitated by hospitals' retained revenue from reducing hospital volume within fixed budgets.

Hospital efforts to provide health care services in places of need. During site visits, several hospitals mentioned efforts to provide or bolster health care services in low socioeconomic settings. For example, one hospital began a mobile health clinic for people without regular access to health care. During the COVID-19 pandemic, the mobile clinic provided vaccinations but, at other times, has offered primary care services such as screening and evaluation. Another hospital partnered with Goodwill to open a grocery store with an on-site clinic in a lower socioeconomic area. Several hospitals had partnerships with Federally Qualified Health Centers or other community clinics that offered free or subsidized care. Finally, a few hospitals offered diabetes prevention services in community-based organizations, such as churches.

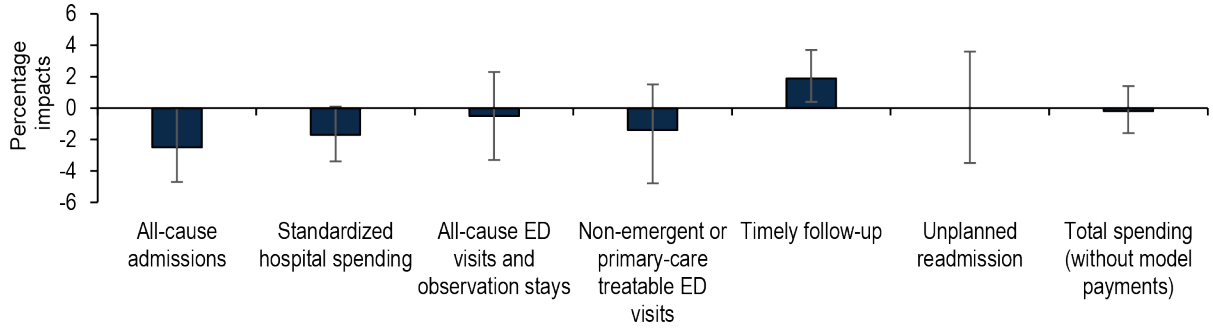
Hospital efforts to address health-related social needs. Many health-related social needs have a geographic element linked to domains captured in the SVI. For example, inadequate access to housing, healthy food, and transportation can all hinder health. In site visits, most hospitals used community health workers or care managers to screen for and address health-related social needs. For example, one hospital provided transportation to appointments, a food pantry to increase access to groceries, and rent and utility payment assistance. Transportation support could help beneficiaries make it to appointments, thereby improving timely follow-up and potentially reducing future preventable admissions and readmissions. Another hospital partnered with its local municipality to provide permanent housing and support—such as job training and addiction treatment—for individuals and families experiencing homelessness to reduce preventable hospital use.

Chapter 5. The Added Effects of the Maryland Primary Care Program for Medicare Fee-For-Service Beneficiaries

Key findings

- Beyond the other model components, the Maryland Primary Care Program possibly reduced admissions from 2019 to 2022 by 2.5% (*p*-value = 0.10) (Exhibit 5.1). Targeted care management services for high-risk patients might have driven potential reductions in all-cause admissions by increasing these patients' contact with practices, enabling timely detection of new or worsening health conditions, although implementation challenges such as lack of time, staff, and resources may have limited the impacts on hospital use.
- The program did not reduce all-cause outpatient emergency department visits and observation stays or a more preventable subset of these visits on average from 2019 to 2022. It might have reduced, however, the more preventable emergency department visits in 2021 and 2022 by 3.7% (*p*-value = 0.11). Care managers made it easier for high-risk patients to contact practices between visits, which might have helped reduce non-emergent or primary-care-treatable emergency department visits.
- There were modest improvements on timely follow-up after acute exacerbation of a chronic condition in 2019 to 2022 (1.9%, *p*-value = 0.04), no reductions in 30-day unplanned readmissions. Most practices we interviewed reported implementing new workflows to call patients after discharge, but similar post-discharge follow-up calls that hospitals conducted during the program might have muted the effect of calls from Maryland Primary Care Program practices on readmission rates.
- The program did not significantly reduce total Medicare spending. Among beneficiaries attributed to 2019 practices, the program saved about $6 million dollars per year but cost CMS an average of $96 million in payments made to practices per year for a net loss of $90 million annually.
- Beyond the outcomes already described, many practices we interviewed said that the program advanced their long-term capacity to deliver comprehensive primary care such as assessing health-related social needs.

Exhibit 5.1. In its first four years, MDPCP might have reduced some hospital use and made modest improvements in quality, but it yielded little savings that did not cover the cost of the program



Notes: (1) Total spending (without model payments) is based on a combination of non-hospital spending and standardized hospital spending (see Section 5.6 for details). (2) The standardized hospital spending and total spending impacts are based on data from 2019 to 2021. (3) ED visits are outpatient (i.e., do not lead to an admission) and can be for any cause ("all-cause") or for reasons that are more preventable ("non-emergent or primary-care treatable").(4) Error bars represent the 90% confidence interval. Estimates in which the intervals do not span zero are statistically different from zero at a $p < 0.10$ threshold.

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

CMS and the Maryland Department of Health introduced the Maryland Primary Care Program (MDPCP) in 2019 at the start of the MD TCOC period. This program represents a significant investment from CMS and the state into primary care transformation in Maryland. As of 2022, the program reaches about 52% of all beneficiaries in Maryland, with an annual program cost to CMS of $168 million, exclusive of Comprehensive Primary Care Payments.[43] The state has also provided technical assistance to practices to support transformation. To evaluate the impact of these investments, CMS is interested in understanding the following question: *What is the added effect of MDPCP on key outcomes in the state beyond the impacts of other Maryland Model components (that is, other incentives and supports such as hospital global budgets)?*

5.1. Methods

5.1.1. Methods for estimating impacts

In Chapter 2, we used an out-of-state comparison group to estimate the effects of all model components (including global budgets, MDPCP, and other model supports) combined for Maryland Medicare fee-for-service (FFS) beneficiaries throughout the state. Here, because we are estimating the *added* effect of MDPCP on top of other model components, we use a different estimation strategy and comparison group. Specifically, we used matched comparison practices drawn from within Maryland that are subject to the same MD TCOC incentives and supports other than those in MDPCP to separate the effects of other model elements from the effects of MDPCP. Using a difference-in-differences design comparing baseline (2017–2018) to intervention (2019–2022) outcomes with practice-level fixed effects, we were able to net out any differences that remain constant over time between MDPCP practices and the selected comparison group (see Appendix E).

For simplicity and ease of interpretation, our analysis used the 380 practices that joined MDPCP in 2019 and excluded practices that joined later. The MDPCP practices starting in 2019 account for 75% of the practices that have ever joined as of 2022 and 82% of all beneficiaries ever attributed to an MDPCP practice from 2019 to 2022.[44] The comparison group includes 450 practices, and we weighted it to resemble the MDPCP practices. The MDPCP and comparison group practices were well matched on region, beneficiary health status, and percentage of providers that specialized in primary care (see Appendix E.1.4 and E.1.5 for details on beneficiary attribution and matching, respectively). MDPCP practices were larger, however, in number of providers and number of attributed beneficiaries, and more likely be part of health system than comparison practices—reflecting the large differences between those that did and did not participate (see 5.2.1), which we could only partly mitigate through matching.

[43] The $168 million includes all enhanced payments made to practices and Care Transformation Organizations in 2022, except for the Comprehensive Primary Care Payments, which include partial FFS payments for certain primary care services.

[44] In all, 19 practices were later dropped as part of our inclusion and exclusion criteria for matching, leading a final sample of 361 practices participating in MDPCP.

There was high uptake of MDPCP among primary care practices in Maryland, particularly among large health systems, leaving relatively few practices to serve as matched comparisons. Therefore, this analysis has only moderate power to detect impacts. We estimated minimal detectable effects[45] between 2% and 3% for all-cause admissions and larger for rarer events such as potentially preventable admissions (see Appendix E.1.6). To meaningfully interpret estimated effects given the challenges related to power, for this chapter, we also reference a new category of possible impacts as those in which the percentage impact is greater than 2% (in either a favorable or unfavorable direction) and the *p*-value is between 0.10 and 0.20. We also pooled effects over four-year (2019–2022) and two-year (2019–2020 and 2021–2022) time periods to improve power but still maintain the ability to observe some effects on outcomes that might grow over time.[46]

5.1.2. Health system spillover sensitivity analysis

We separately analyzed how sensitive results are to possible spillover within health systems. The matched comparison group contains some practices that participate in health systems with high uptake of MDPCP.[47] Because MDPCP might have prompted systems to transform some aspects of care for all their practices and not only those in MDPCP, in the sensitivity analyses, we removed practices with increased likelihood of spillover (see Appendix E.1.11. If spillover occurs, these practices would benefit from some or all of the intervention, and our main estimates would be closer to zero than the true effect. In general, we find some evidence of spillover, but many of the main messages are similar. In the results that follow, we highlight areas in which removing practices with increased likelihood of spillover materially affected our findings.

5.1.3. Implementation methods

Finally, to help determine what might be driving potential MDPCP impacts, we relied on two implementation data sources: (1) MDPCP practice portal data self-reported by 336 practices that began participating in MDPCP in 2019 and continued through 2022[48] and (2) virtual site visit interviews with practitioners, staff, and administrators from 15 primary care sites and six Care Transformation Organizations from September 2022 to February 2023. We synthesized the MDPCP practice portal data with interview data to assess consistency across data sources and improve our understanding of practices' care delivery changes during MDPCP. Although

[45] The minimal detectable effect is the minimum true effect that MDPCP would need to have for us to be able to reliably (that is, at least 80% of the time) detect a statistically significant effect (using a two-tailed, $p < 0.10$ threshold).

[46] Conversely, we chose not to focus on single-year estimates when possible to limit the chances of drawing false conclusions from noisy estimates. The one exception to this approach is when we describe effects for standardized hospital spending and total spending (derived from standardized hospital spending). We only have this measure through 2021, so we cannot pool effects with 2022 for the last two years of MDPCP.

[47] High uptake of MDPCP is defined as more than 80% of a system's eligible practices participating in MDPCP.

[48] In our analysis of the portal data MDPCP practices report to CMS, we excluded 44 practices that stopped participating in MDPCP before quarter 4 2022. The 44 practices withdrew from the program, merged with other practices, or were terminated.

practices reported making many changes to care delivery, we identified potential drivers of MDPCP impacts by assessing (1) whether the change can logically affect the outcomes measured; (2) whether the reported changes were widespread enough across MDPCP practices to affect outcomes; (3) when during the model period the change took place (if at all); and (4) whether the actual changes implemented were enough to affect outcomes, per descriptions of implementation experiences and challenges from site visit interviews. For example, many practices reported that they began screening beneficiaries for health-related social needs during MDPCP, but practices that participated in site visits reported that they were unable to reliably connect patients to resources to meet their needs. We highlight some of these other care changes in Section 5.8 and describe all the findings about care delivery activities in detail in Appendix E.2.

5.2. Characteristics of the MDPCP participants and the beneficiaries they serve

5.2.1. Practices participating in the model

About 65% (508 out of 779) of all eligible practices in Maryland participated in MDPCP in 2022 (see Appendix A.1.2 for details).[49] MDPCP practices were larger than non-MDPCP practices in terms of the median number of primary care providers (five versus two) and the median number of attributed beneficiaries (466 versus 200) (Exhibit 5.2). MDPCP practices were also far more likely to be affiliated with a health system than non-MDPCP practices (47% versus 14%).

Nearly all practices that participated in site visits reported joining MDPCP based on the expectation that MDPCP would help them provide better care to their patients and boost their performance in future value-based initiatives by strengthening their capabilities to deliver advanced primary care. They valued MDPCP's structured requirements, learning support, and payments, which they said guided their practices on how to focus on and invest in care transformation. A couple practices said that practice coaches were a unique part of MDPCP that are not available in other value-based models and made them feel motivated and supported to join and remain in MDPCP.

Nearly all system-owned practices we interviewed said their systems made the decision to participate in MDPCP. This finding aligns with other findings from site visits on how systems drive MDPCP implementation at their practices. Systems pooled MDPCP funding across all MDPCP practices in their system to make large investments in the overall primary care infrastructure of all their MDPCP practices, such as electronic health record (EHR) upgrades and additional staff. Systems also reported making some changes for the system's MDPCP *and* non-MDPCP practices (such as Screening, Brief Intervention, and Referral to Treatment or advance care planning), which could have been a result of other model incentives.[50]

[49] To be eligible for MDPCP, practices in Maryland must have at least one primary care provider and at least 125 attributed Medicare FFS beneficiaries in a year.

[50] In accordance with the MDPCP program requirements, systems could not use MDPCP funding for non-MDPCP practices.

Exhibit 5.2. MDPCP practices were larger and more likely to be affiliated with a health system than non-MDPCP practices in Maryland that provide primary care in 2022

Characteristic	MDPCP practices	Non-MDPCP practices
Count (N)	508	271
Number of primary care providers per practice (Median [IQR])	5 [2-8]	2 [1-7]
Number of attributed beneficiaries per practice (Median [IQR])	466 [285-887]	200 [28-449]
Health system affiliation (%)	47%	14%
FQHC designation (%)	2%	1%

Notes: (1) This exhibit does not represent the sample used to determine impact estimates (which is limited to 2019 starters), but instead focuses on differences between all MDPCP practices (2019–2021 starters) and Maryland practices that are not in MDPCP but are otherwise eligible for the program as of 2022. (2) See Appendix E.1.5 for information on pre- and post-matching baseline differences between the intervention group (2019 MDPCP practices) and the comparison group used in the impact analysis.

FQHC = Federally Qualified Health Center, IQR = interquartile range; MDPCP = Maryland Primary Care Program.

5.2.2. Characteristics of Medicare beneficiaries served by MDPCP practices

As of 2022, about 780,000 Maryland Medicare FFS beneficiaries meet the criteria for being included in our analytic population. Of these, about 305,000 are attributed to MDPCP practices that started the program in 2019, and about 380,000 beneficiaries were not attributed to any MDPCP practice. The remaining approximately 96,000 not included in our analysis are attributed to MDPCP practices that started in 2020 and 2021.[51]

Compared with Maryland beneficiaries who are not attributed to an MDPCP practice, the 2019 MDPCP practices' beneficiaries were older (73 versus 71) and less likely to be non-Hispanic Black (19% versus 26%), dually eligible for Medicaid (13% versus 22%), or have an original reason for entitlement code for disability and/or end-stage renal disease (15% versus 21%) (Exhibit 5.3). The beneficiaries in 2019 MDPCP practices had similar Hierarchical Condition Category scores as non-MDPCP beneficiaries in Maryland despite being more than two years older, suggesting that the non-MDPCP beneficiaries in Maryland were less healthy for their age.

Similarly, on average, the MDPCP beneficiaries included in our analysis were slightly older and less likely to be non-Hispanic Black or dually eligible than those excluded from the analysis due to being attributed to MDPCP practices that started in 2020 or 2021 (see Appendix E.1.2). These differences reflect the efforts to expand the reach of MDPCP, including how, in 2021, CMS expanded the program to Federally Qualified Health Centers to bring in a larger share of beneficiaries from marginalized groups.

[51] MDPCP did not enroll new practices in 2022. This table is restricted to Maryland FFS beneficiaries that are enrolled in Medicare Part A and B for at least one month in 2022.

Exhibit 5.3. Beneficiaries attributed to 2019 MDPCP practices are less likely to be non-Hispanic Black or dually eligible than Maryland beneficiaries not attributed to MDPCP in 2022

Measure	Maryland beneficiaries attributed to 2019 MDPCP practices	Non-MDPCP Maryland beneficiaries
Number of FFS Medicare beneficiaries	304,755	378,199
Average HCC score	1.14	1.14
Percentage living in rural areas	18%	16%
Average Social Vulnerability Index ranking	0.35	0.38
Average age	73.2	70.9
Percentage female	59%	55%
Percentage non-Hispanic black	19%	26%
Percentage dually eligible for Medicare	13%	22%
Percentage with an original reason for Medicare entitlement other than aged (for example, disability or ESRD)	15%	21%

Notes: (1) This table compares characteristics of Medicare FFS beneficiaries served by 2019 MDPCP practices with those of Maryland FFS beneficiaries that are not attributed to any MDPCP practice (including 2020 and 2021 starters) in 2022. (2) Maryland beneficiaries are attributed to MDPCP using information from The Lewin Group rather than the attribution implemented for the evaluation analysis in this chapter. (3) Information on balance on these characteristics between beneficiaries attributed to 2019 MDPCP practices and the matched comparison group using the evaluation attribution approach are available in Appendix E.1.5.

ESRD = end-stage renal disease; FFS = fee for service; HCC = Hierarchical Condition Category; MDPCP = Maryland Primary Care Program.

5.3. Added effects of the program on hospital use and their possible drivers

5.3.1. Effects

All-cause acute-care hospital admissions

- MDPCP possibly reduced all-cause admissions on average over the first four years of the program by about 5.7 admissions per 1,000 beneficiaries per year or 2.4% (90% confidence interval [CI]: 4.7, 0.0; $p = 0.10$) (Exhibit 5.4).[52]
- Estimates of program effects were slightly larger from 2021 to 2022, with a reduction of 6.8 admissions per 1,000 beneficiaries per year or 2.9% (90% CI: 5.7, 0.0; $p = 0.10$), than they were from 2019 to 2020, with a reduction of 4.6 admissions per 1,000 beneficiaries per year or 1.9% (90% CI: 4.2, -0.5; $p = 0.19$).

[52] Because of the challenges related to power, for this chapter, we also identify possible impacts in which the impact is greater than 2% (in a favorable or an unfavorable direction) and the *p*-value is between 0.10 and 0.20.

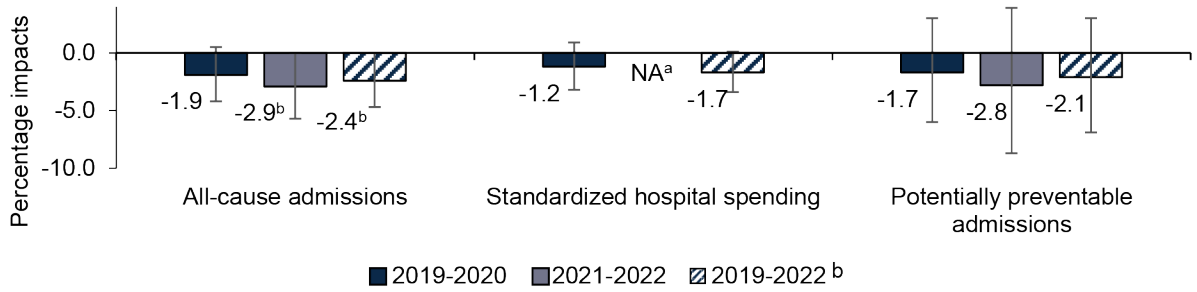
Potentially preventable admissions

- The program did not reduce potentially preventable admissions in its first four years (-2.1%, 90% CI: -6.9, 3.0; $p = 0.52$), but the analysis was underpowered to detect effects as small as 2% for potentially preventable admissions, which constitute about one-third of all admissions.
- Similar to those of all-cause admissions, estimates of program effects on potentially preventable admissions were slightly larger on average from 2021 to 2022 than they were from 2019 to 2020, but neither effect was statistically significant.

Intensity of hospital care (measured by standardized hospital spending)

- MDPCP did not measurably reduce standardized hospital spending on average over its first three years (-1.7%, 90% CI: -3.4, 0.1; $p = 0.11$).[53] Because of lags in data availability, we only have standardized hospital spending outcomes through 2021 for this report.

Exhibit 5.4. MDPCP possibly reduced all-cause admissions from 2019 to 2022 but did not reduce potentially preventable admissions or standardized hospital spending



Notes: (1) Effects represent average annual impact estimates over the time periods noted. (2) Error bars represent the 90% confidence interval. Estimates in which the intervals do not span zero are statistically different from zero at a $p < 0.10$ threshold.

[a] We do not present results for standardized hospital spending for the 2021-2022 period because we only had data for 2021 and do not want to overemphasize impact results for one year, especially because of the statistical noise in these MDPCP estimates.

[b] Average effect represents possible impacts, which we define as those in which the impact is greater than 2% (in a favorable or an unfavorable direction) and the *p*-value is 0.10 to 0.20.

[c] For standardized hospital spending, which we measured through 2021 because of lags in data availability, the average is from 2019 to 2021.

MDPCP = Maryland Primary Care Program; NA= Not Applicable.

We see some evidence of health-system spillover effects on hospital use

As we note in Section 5.1, spillover from MDPCP practices in the same system as non-MDPCP practices could dampen our estimates of the effects of the program. Removing high-likelihood spillover practices offers some evidence as to whether spillover affects our results. Specifically, we observed modestly more favorable effects on hospital admissions (-3.3%, 90% CI: -5.2, -0.8;

[53] Standardized hospital spending was winsorized to the 99.5th percentile to limit potential bias because of spending outliers (for example, the maximum spending per beneficiary per year was about 3.5 million dollars in 2021, and the 99.5th percentile was about $143,000).

$p = 0.03$), standardized hospital spending (-2.5%, 90% CI: -4.1, -0.9; $p = 0.01$), and potentially preventable admissions (-5.1%, 90% CI: -9.4, -0.3; $p = 0.09$), suggesting that spillover might have occurred and that the true effects of MDPCP on hospital use could be slightly more favorable (see Appendix E.1.11 for more results and details).

Despite these findings, we believe the primary impact estimates, which include high-risk spillover practices, to be our best estimates of the added effects of MDPCP for two reasons. First, health systems could be driving care transformation across all their practices for reasons other than MDPCP (for example, in responding to global budget incentives). Including practices that had a high likelihood of spillover in the comparison group is therefore helpful for isolating the added effect of MDPCP because they make good comparisons to participating health system practices. Second, CMS directed practices to only use MDPCP funds for MDPCP practices, which might have limited the likelihood of spillover for intensive services such as care management (though systems might have elected to use their own funds to provide care management for non-MDPCP practices). Still, the main estimates might understate true effects, and the sensitivity results might overstate them—with true effects potentially falling within the range bounded by both estimates. Fortunately, many of our primary conclusions on hospital use remain the same, albeit with slightly stronger evidence after high-likelihood spillover practices were removed.

5.3.2. Drivers

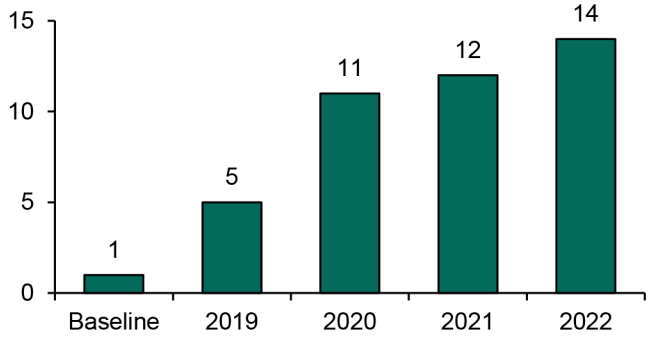
"[Care managers] have been able to intervene...and handle something from an outpatient perspective that would have otherwise required an inpatient [stay]."

–Practice respondent

Care management services for high-risk patients might have helped beneficiaries receiving these services stay healthier, resulting in fewer admissions. Practices we interviewed thought that the care management services they and their partners at Care Transformation Organizations provide could reduce admissions. Specifically, they said that the care management processes they implemented for MDPCP resulted in more frequent contacts with high-risk patients, which have allowed them to intervene or treat patients before they developed new diagnoses or experienced exacerbations of existing ones. A few practices said investments in care management allowed them to spend more time with patients during and between visits by having nurse care managers follow up with patients, involving the doctors for between-visit questions about patients' health, and allowing doctors to maximize their time with high-risk patients during visits. As one system leader put it, "With the money we get through MDPCP, [our doctors] can see less patients and do a better job with the [patients they do see]. Medicare patients [and] older patients take a lot more time. They take a lot more callbacks, messages, which, traditionally, family practice has never been compensated for."

The percentage of practices that reported having a designated care manager increased from 84% in 2020 (the first year the question was asked) to 94% in 2022. Meanwhile, the median percentage of empaneled beneficiaries under any care management service (episodic or longitudinal) at MDPCP practices grew from 1% at the outset of the model to 14% in 2022 (Exhibit 5.5).

Exhibit 5.5. Maryland Primary Care Program practices reported that the median percentage of beneficiaries under care management increased from 1% at the outset of the model to 14% in 2022



Note: Mathematica's analysis of MDPCP practice portal data from baseline (N = 336), 2019 (N = 336), 2020 (N = 336), 2021 (N = 336) and 2022 (N = 297).

Practices we interviewed reported using MDPCP payments, specifically the care management fee, to pay for care management staff. In 2022, the median practice received $101,000 in care management fees. Even practices that could not afford a care manager with the level of MDPCP payments they received found ways to access one. Practices that partnered and shared half their care management fee and Health Equity Advancement Resource and Transformation Payment (HEART) payments with a Care Transformation Organization received care management staff through the Care Transformation Organization. In addition, most systems we interviewed reported pooling MDPCP payments across participating practices to invest in resources such as care management staff that could be shared across the system's MDPCP practices.

Care management staff provided long-term and short-term care management services to high-risk patients, per MDPCP's requirements. Long-term (longitudinal) care management involves targeted, proactive, relationship-based care management services to beneficiaries identified as having increased risk. These might include patients with complex treatment regimens, multiple comorbidities, behavioral and social risk factors, or some combination of these. Practices we interviewed reported using a combination of structured clinical data and qualitative clinical judgment to identify patients for longitudinal care management. Specifically, care managers said they relied on lists of high-risk patients generated by algorithms, such as risk scores calculated by the EHR or the Hilltop Pre-AH Model[54] report in Chesapeake Regional Information System for our Patients (CRISP), as well as through referrals from the patient's doctor or care team. In short-term (episodic) care management, care managers support patients who are vulnerable during a shorter time frame, such as after receiving a new diagnosis or an injury, a major life event that could affect their ability to take care of themselves, an exacerbation of an existing condition, or a transition in care such as discharge from the hospital or nursing facility. These

[54] The Hilltop Pre-AH Model is a risk prediction model that uses a variety of risk factors derived from Medicare claims data to estimate the probability that a patient incurs an avoidable hospital event in the near future. For more information, see here.

patients might be identified in similar ways as longitudinally care-managed patients: through referrals from the care team and patient lists generated from the EHR, such as patients with new diagnoses or recent lab results showing poorly controlled diabetes.

Care managers provided patients with between-visit care by phone and in person to help them meet their health goals. As part of their support, care managers might educate patients on how to manage their new or existing conditions; call patients to monitor their symptoms and raise concerns to the doctor early; and help patients navigate referrals, such as to specialists, behavioral health, or services that help patients meet their health-related social needs. Several practices that we interviewed said that patients could directly call care managers with questions or concerns between visits as opposed to waiting for the care manager to check in on them.

Practices varied in whether they embedded care managers in the practice. Most practices we interviewed reported embedding care managers at their practice at least one day per week. A few small- and medium-sized system-owned practices described sharing care managers with one or more other practices in the system, with the care managers alternating days on-site at the practices they support. Many practices reported benefits of embedding care managers in their practices, saying that it improved coordination and trust between patients, practitioners, and care managers. The few practices without embedded care managers said that care managers communicated with patients and practice staff while working remotely.

On the other hand, the challenges to implementing care management that practices described might have dampened its benefits for patients and its effects on hospital use. A few practices reported that care managers could not reach all the patients they believe could benefit from the services. They attributed this to insufficient care management capacity, noting that it takes more time than anticipated to provide care management to patients and that care managers have many competing responsibilities, such as conducting follow-up phone calls to patients discharged from the hospital or ED. For example, one practice reported that its care manager could only serve 5% of high-risk patients, which it thought resulted in missed opportunities for working with rising risk patients.

Box 5.A. Reductions in all-cause hospital admissions were not driven by reductions in potentially preventable admissions.

During MDPCP, potentially preventable admissions—the kind of admissions you might expect care managers to most directly be able to affect, such as managing chronic obstructive pulmonary disease—were about one-third of all admissions. To drive reductions in all-cause admissions (2.5%), effects on potentially preventable admissions would need to be much larger than 2.5% if the other two-thirds of admissions were unaffected. But we estimated that MDPCP reduced potentially preventable admissions by just 2.1% (not statistically significant), suggesting that the program found ways to reduce admissions not categorized as potentially preventable.

One reason effects on all-cause admissions do not appear to be driven by potentially preventable admissions could be that our measure of potentially preventable admissions does not capture all admissions that might be preventable. One study found that the Agency for Healthcare Research and Quality's Prevention Quality Indicator measure we use has some discordance in how it categorizes preventable admissions when compared with surveyed physicians, noting that the measure "was originally designed to assess population-level access to care," not preventable admissions (Patel et al. 2016). In general, categorizing potentially preventable admissions is difficult because of the many quantitative and qualitative factors that truly determine whether an admission is preventable, such as age, number of comorbidities, homelessness, substance use, frailty, or the intensity or duration of the hospital stay (Cressman et al. 2023; Trinh et al. 2021). ◢

5.4. Added effects of the program on outpatient emergency department (ED) visits and observation stays and their possible drivers

5.4.1. Effects

All-cause outpatient ED visits and observation stays

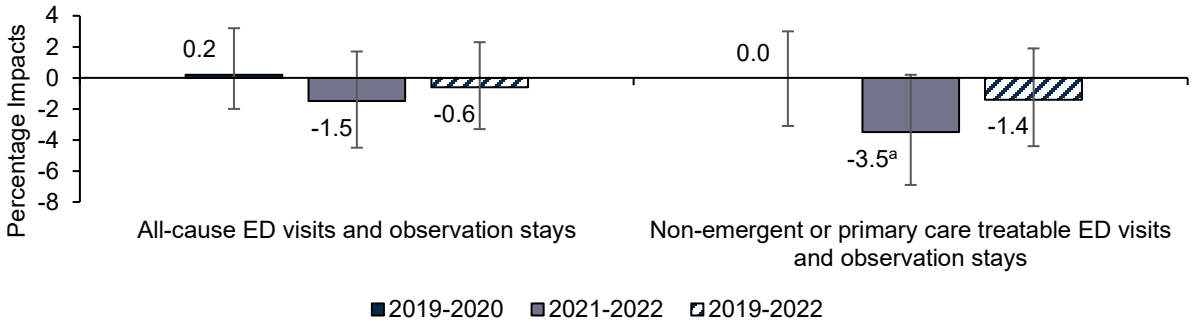
- MDPCP did not reduce all-cause ED visits and observation stays through its first four years (-0.6%, 90% CI: -3.3, 2.3; $p = 0.73$) (Exhibit 5.6).
- Estimates of program effects, though not statistically significant, were slightly larger from 2021 to 2022 (-1.5%, 90% CI: -4.5, 1.7; $p = 0.43$) than they were across all four years.

Non-emergent or primary-care-treatable outpatient ED visits and observation stays

- MDPCP did not reduce the subset of ED visits that were non-emergent or primary care treatable across 2019 to 2022 (-1.8%, 90% CI: -4.8, 1.5; $p = 0.36$).[55] The program did, however, possibly reduce these primary-care-sensitive visits from 2021 to 2022 by about 4.7 visits per 1,000 beneficiaries per year or 3.5% (90% CI: 6.9, -0.2; $p = 0.11$).

[55] Non-emergent visits are conceptualized as ones where the immediate medical care was not required within 12 hours. Primary care treatable visits are conceptualized as those where treatment was required within 12 hours, but care could have been provided effectively and safely in a primary care setting. For information on how these measures are constructed see Appendix E.1.8 (NYU Wagner n.d.).

Exhibit 5.6. MDPCP possibly reduced non-emergent or primary-care-treatable ED visits and observation stays from 2021 to 2022 but did not reduce all-cause ED visits and observation stays



Notes: (1) Effects represent average annual impact estimates over the time periods noted. (2) Error bars to represent the 90% confidence interval. Estimates in which the intervals do not span zero are statistically different from zero at a $p < 0.10$ threshold.

[a] Average effect represents possible impacts, which we define as those in which the impact is greater than 2% (in a favorable or an unfavorable direction) and the *p*-value is 0.10 to 0.20.

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

5.4.2. Drivers

Increased access to care through care managers might have contributed to the potential modest reductions in non-emergency ED visits. As we note in Section 5.3.2, a few practices that participated in site visits said that patients could call their care managers directly after MDPCP began, including with inquiries about when to seek care through the ED or the practice. This kind of access might reduce ED visits by giving patients immediate feedback on where to seek care. Based on the challenges of implementing care management, however, this type of responsiveness might be difficult to achieve for many care managers who have already reached their capacity.

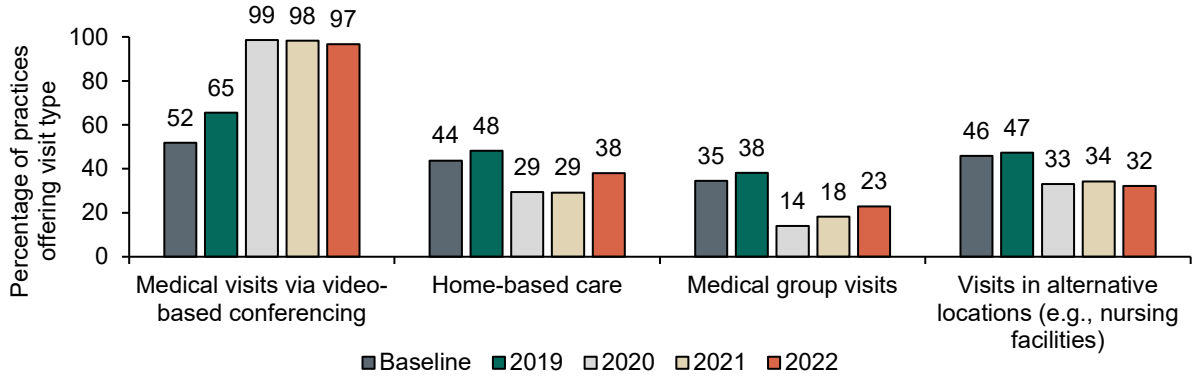
Non-emergency ED visits are too small to move the needle on all-cause ED visits. Non-emergent or primary-care-treatable ED visits represent only about one-third of all-cause ED visits and observations stays in Maryland as of 2022, so they might not be able to affect all ED visits enough to detect differences given the limited statistical power for this analysis.

MDPCP required practices to engage in activities aimed at improving access to care, but many of these activities were in place at participating practices before MDPCP began in 2019. As the bullets that follow note, MDPCP included several care transformation requirements intended to improve beneficiaries' access to care and reduce ED visits. Practice activities to meet these requirements were insufficient for detecting impacts, however, because they did not make changes that could lead to reduced ED visits during the model period or because the changes they made were not unique to MDPCP practices.

- **24/7 access.** CMS required practices to provide 24/7 access to a care team member or practitioner with access to the patients' EHR, but 95% of practices reported doing this before MDPCP began, leaving limited ability for the program to affect impact estimates.

- **Same-day and next-day appointments.** CMS encouraged practices to provide same-day or next-day appointments to make it easier for patients to receive prompt care that might prevent the need for an ED visit. Similar to 24/7 access, however, almost all practices (93%) reported that they already provided these appointments to beneficiaries before MDPCP began.
- **Alternative visit types.** CMS required Track 2 MDPCP practices to ensure that beneficiaries had access to their practitioner or care team through at least one alternative care strategy outside of FFS office visits. Examples of alternative care strategies include home visits, group visits, and telehealth. Few practices reported implementing alternative visit types other than telehealth. And although the percentage of practices that reported implementing telehealth increased by 45 percentage points to include nearly all practices over the course of the model (Exhibit 5.7), nearly all practices that we interviewed attributed this change to the COVID-19 pandemic and the change in policy that allowed practices to collect FFS payments for telehealth visits. This finding suggests that practices across Maryland were newly implementing telehealth during the model period, not just MDPCP practices.
- **Expanded hours.** Although not a requirement, CMS encouraged practices to expand office hours to evenings and weekends to provide patients with more alternatives to the ED. Although the percentage of practices that reported offering expanded office hours grew from 52% to 75% from 2019 to 2022, these changes were likely insufficient to reduce ED visits based on interviews with MDPCP practices. When asked about expanding hours, a few practices noted they refer patients to off-site urgent care facilities. But these urgent care facilities are not unique to MDPCP practices, meaning that other primary care practices in Maryland might also refer their patients to them as an alternative to the ED.

Exhibit 5.7. The percentage of MDPCP practices that offered medical visits via video-based conferencing increased, but provision of other alternative visit types remained relatively low throughout MDPCP



Note: Mathematica's analysis of MDPCP practice portal data from baseline (N = 336), 2019 (N = 336), 2020 (N = 336), 2021 (N = 336) and 2022 (N = 332).

MDPCP = Maryland Primary Care Program.

5.5. Added effects of the program on post-acute outcomes and their possible drivers

5.5.1. Effects

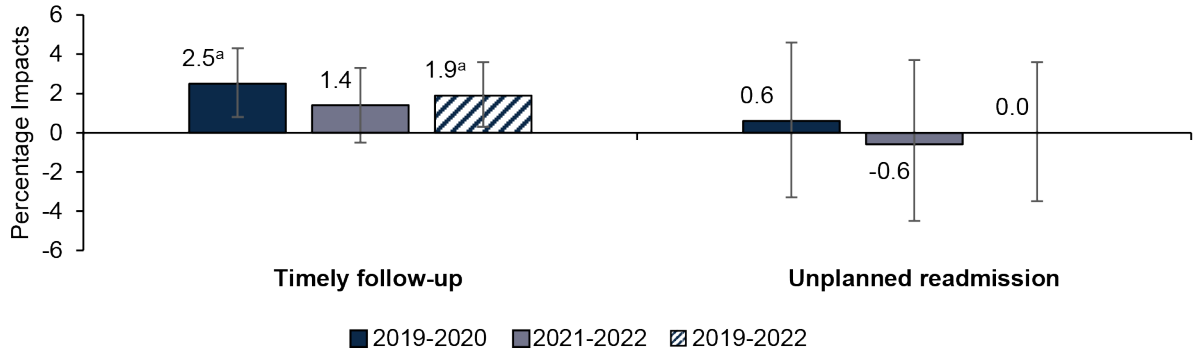
Timely follow-up after acute exacerbation of a chronic condition

- MDPCP improved timely follow-up after acute exacerbation of a chronic condition by 1.9% from 2019 to 2022 (1.4 percentage points, 90% CI: 0.3, 2.6; $p = 0.04$) (Exhibit 5.8).
- Estimates of program effects were slightly larger, 2.5%, and only statistically significant in the first two years of the program across 2019 to 2020 (1.8 percentage points, 90% CI: 0.6, 3.0; $p = 0.01$) as compared with a 1.4% impact in the two most recent years of the analysis, 2021 to 2022 (1.0 percentage points, 90% CI: -0.4, 2.3; $p = 0.24$).

30-day unplanned readmission

- MDPCP had no effect on rates of 30-day unplanned readmission (0.0 percentage points, 90% CI: -0.6, 0.6; $p = 0.98$).
- The percentage impacts were 0.6% from 2019 to 2020 (0.1 percentage points, 90% CI: -0.5, 0.8; $p = 0.75$) and -0.6% from 2021 to 2022 (-0.1 percentage points, 90% CI: -0.8, 0.5; $p = 0.73$), and neither was statistically significant.

Exhibit 5.8. MDPCP improved timely follow-up after acute exacerbation of a chronic condition but did not reduce 30-day unplanned readmission rates



Notes: (1) Effects represent average annual impact estimates over the time periods noted. (2) Error bars represent the 90% confidence interval. Estimates in which the intervals do not span zero are statistically different from zero at a $p < 0.10$ threshold.

[a] Average effect is statistically different from zero ($p < 0.10$).

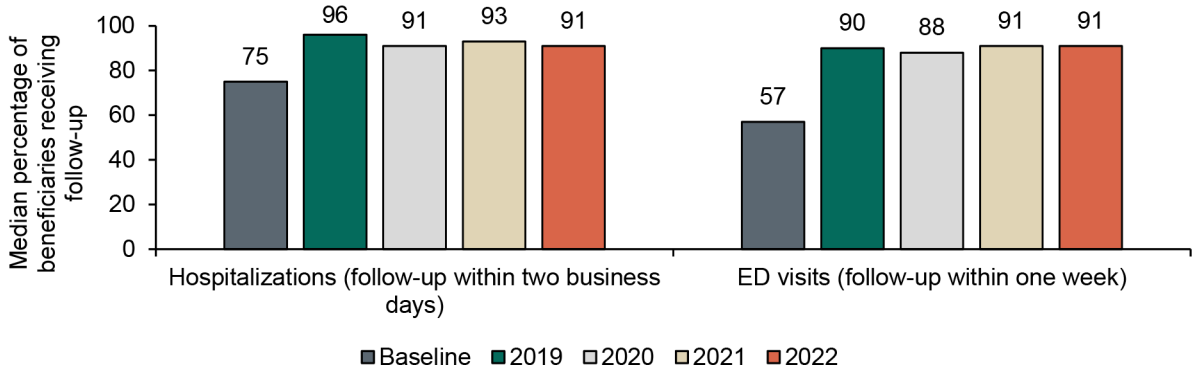
MDPCP = Maryland Primary Care Program.

5.5.2. Drivers

MDPCP practices increasingly tracked and called patients after hospital or ED discharge, which might have contributed to increases in timely follow-up visits after acute exacerbation of chronic conditions. In an effort to reduce unnecessary readmissions and costs by ensuring post-discharge needs are met in a timely manner and do not escalate, CMS required practices participating in MDPCP to ensure that all MDPCP beneficiaries received a follow-up interaction from the practice within two business days for hospital discharges and a week for ED discharges. To meet this requirement, most practices we interviewed described implementing new workflows that required care managers (hired with MDPCP funds) or other practice staff to review discharge reports daily and call patients to follow up. During the follow-up phone call, they discussed discharge instructions with the patient, scheduled a primary care follow-up visit (if deemed necessary), and ensured patients had their medications and understood their medication regimens.

Over the course of MDPCP, practices increasingly reported to CMS that they tracked discharges from the hospital and ED and conducted post-discharge follow-ups. The percentage of practices that reported tracking discharges from the hospital and ED doubled during the first two years of the program, from around 50% at the outset of the program to nearly 100% in 2020, where it stabilized through 2022. Among practices that tracked hospital and ED and hospital discharges at baseline, the median percentage of beneficiaries receiving follow-up within the required time frame (that is, two business days for hospitalizations and one week for ED visits) increased in the first year of the program (by 21 and 33 percentage points, respectively) and stabilized at about 90% through 2022 (Exhibit 5.9).

Exhibit 5.9. Among MDPCP practices that tracked discharges at baseline, practices reported an increase in the median percentage of beneficiaries receiving a timely follow-up call after hospital and ED discharge



Notes: (1) For hospitalizations: Based on Mathematica's analysis of the MDPCP practice portal data from baseline (N = 174), 2019 (N = 169), 2020 (N = 171), 2021 (N = 173), and 2022 (N = 159) among the 180 practices that reported tracking hospitalizations at baseline. (2) For ED visits: Based on Mathematica's analysis of the MDPCP practice portal data from baseline (N = 156), 2019 (N = 159), 2020 (N = 158), 2021 (N = 157) and 2022 (N = 171) among 174 practices that reported tracking ED visits at baseline.

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

During interviews, many practices shared anecdotal evidence of how their follow-up efforts reduced readmissions and improved post-discharge outcomes for some patients. A few practice respondents cited follow-ups after discharge as among the most valuable changes they adopted for MDPCP because of their beliefs that these calls made the biggest differences in patients' health outcomes.

"With [discharge follow-up], we have been able to reduce our readmission rates. We've been able to keep people out of the hospital. If they do have chronic readmissions...we've been able to reduce the stay in the hospital, which has helped improve outcomes in terms of complications [and] fatalities."

–Practice respondent

Although MDPCP improved the rate of timely follow-up, these improvements did not translate into impacts on the 30-day unplanned readmissions rate. This may be related to challenges implementing discharge follow-up calls at some MDPCP practices and widespread efforts by hospitals to call all patients after a discharge. Discharge follow-up is expected to reduce avoidable readmissions by addressing beneficiaries' needs after discharge and ensuring they understand discharge instructions. A few factors may have limited the effects of MDPCP practices' follow-up efforts on readmissions:

- *Practices described noteworthy implementation barriers to following up after discharge.* Many practices that we interviewed said that their staff lacked the time necessary to follow up with everyone, often because patients were hard to reach and required numerous calls. Many practices also faced challenges retrieving discharge reports in CRISP because of data lags and other errors when trying to access the reports. As a result, practices sometimes could not follow up with everyone in the time frames specified by CMS.
- *MDPCP practices were not unique in conducting post-discharge follow-ups during the program.* Some large hospitals in Maryland also employed transitional care management teams that reached out to all patients after a discharge. In interviews with practices, many system-owned practices said that the hospital care management team, rather than the practice's care manager, conducts post-discharge follow ups for the practice's patients. This means that beneficiaries in the comparison group were likely also receiving and benefitting from discharge follow-up calls. This could lessen the added effects of MDPCP on readmissions because some beneficiaries would have received discharge follow-up calls even if their practice did not participate in MDPCP.

5.6. Added effects of the program on spending and their possible drivers

5.6.1. Effects

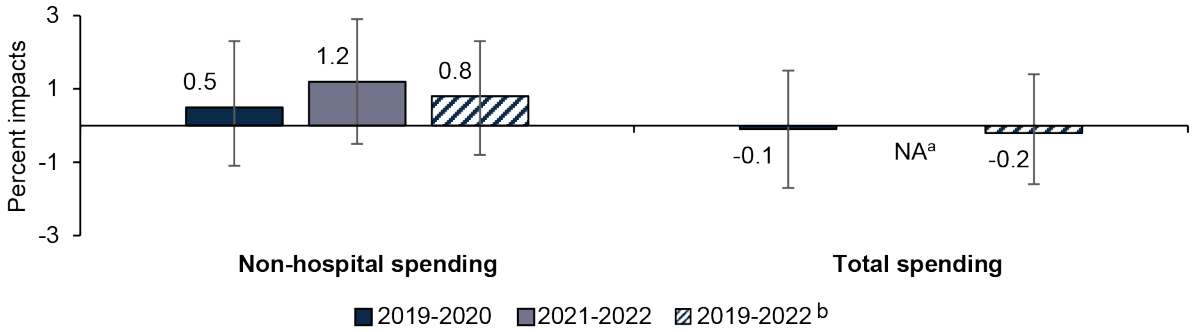
Non-hospital spending

- MDPCP did not reduce non-hospital spending in its first four years (0.8%, 90% CI: -0.7, 2.4; $p = 0.38$) (Exhibit 5.10).[56]
- Estimates of program effects were slightly larger from 2021 to 2022 (1.2%, 90% CI: -0.5, 2.9; $p = 0.25$) than from 2019 to 2020 (0.5%, 90% CI: -1.1, 2.1; $p = 0.64$), but neither was statistically significant.

Total spending (defined as non-hospital spending plus standardized hospital spending)

- MDPCP did not meaningfully reduce total spending from 2019 to 2021 (-0.2%, 90% CI: -1.6, 1.4; $p = 0.86$) with an estimated $19 in savings per beneficiary per year, which was not statistically significant.[57]
- Effects on total spending were similar in all years and not statistically significant.

Exhibit 5.10. MDPCP did not reduce non-hospital spending across 2019 to 2022 or total spending across 2019 to 2021.



Notes: (1) Effects represent average annual impact estimates over the time periods noted. (2) Total spending is based on the sum of non-hospital spending and standardized hospital spending. (3) Error bars represent the 90% confidence interval. Estimates in which the intervals do not span zero are statistically different from zero at a $p < 0.10$ threshold.

[a] We do not present results for total hospital spending for the 2021-2022 period because we only had data for 2021 and do not want to overemphasize impact results for one year, especially because of the statistical noise in these MDPCP estimates.

[b] Standardized hospital spending was measured through 2021 because of lags in data availability, so the total spending average is from 2019 to 2021.

MDPCP = Maryland Primary Care Program; NA= Not Applicable.

[56] All spending measures are winsorized at the 99.5th percentile to limit potential bias due to spending outliers.

[57] This is the measure of total spending that we use to measure the added effect of MDPCP on total Medicare FFS spending. Because hospital spending in Maryland is directly linked to hospital global budgets, any successful MDPCP efforts to reduce hospital volume will not directly lower hospital spending. Therefore, we examine impacts on standardized spending (which is an aggregate measure of hospital service use that removes price differences inherent in the global budget system) and non-hospital spending (which is paid FFS).

Total net savings to Medicare

We estimated that MDPCP practices that started in 2019 reduced spending by a non-statistically significant $19 per beneficiary per year, equivalent to $5.7 million in gross savings per year. On average, CMS paid those same practices about $322 per beneficiary per year from 2019 to 2021 for a total of $96.0 million per year. Therefore, we estimate that the program cost about 17 times more than it generated in savings for the 2019 starters, costing CMS about $90.3 million per year.

In the sensitivity analysis that removed practices with a high likelihood of spillover, total savings would be $26.5 million per year.[58] Although meaningfully larger than the estimate for the main analysis, this estimate is also not statistically significant and remains considerably smaller than the cost of the program.

5.6.2. Drivers

MDPCP did not explicitly aim to reduce non-hospital spending. Instead, the program aims to improve the health outcomes of Maryland residents by supporting the modernization and transformation of health care delivery to help practices provide better value and more comprehensive primary care (Center for Medicare and Medicaid Innovation 2021). Many care transformation requirements aimed to reduce hospital and ED utilization, which could impact standardized hospital spending but are less likely to impact non-hospital spending.

MDPCP practices did not prioritize MDPCP requirements that logically could have reduced non-hospital spending. For example, CMS encouraged practices participating in MDPCP to review the data on high-cost and high-volume specialists and use the data to guide referrals as part of the MDPCP requirement for practices to ensure coordinated referral management for patients seeking care from such specialists. Practices we interviewed, however, rarely reported focusing on reducing referrals to high-volume or high-cost specialists. Only two of the 15 practices (13%) that participated in site visits mentioned reviewing data on high-cost or high-volume specialists as part of their MDPCP work, but neither found it valuable. They said that patients are unlikely to change specialists based on referrals from primary care because their preferences for specialists are based on other factors, such as convenience or recommendations from friends. CMS also encourages practices to ensure coordinated referral management with specialists to reduce duplicative testing, but that might have had unintended effects. The percentage of practices that implemented coordinated referral management increased through the first four years of the program (from 51% at the outset to more than 90% from 2019 to 2022). Yet when asked to describe their coordinated referral management processes during interviews, many practices described efforts to help patients schedule and attend appointments with specialists (for example, by helping patients arrange transportation to their appointments), which might *increase* use of specialty care and therefore non-hospital spending.

[58] Neither impacts on total spending in the main analysis or the health system spillover sensitivity analysis were statistically significant. Savings represent the impact estimate times the number of beneficiaries assigned to the 2019 MDPCP practices averaged across 2019-2022.

5.7. Impacts among a high-risk, high-needs subgroup

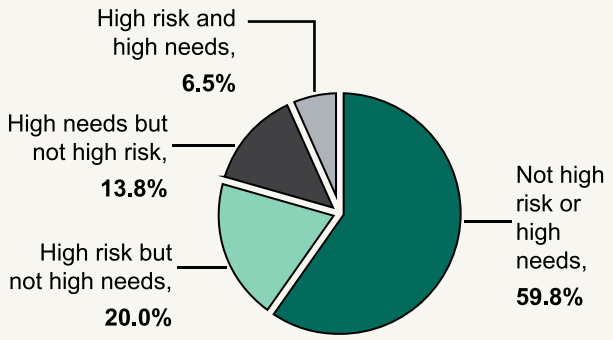
We also examined whether the added effects of MDPCP differ for a subset of beneficiaries who are high risk and high needs compared with all other beneficiaries served by MDPCP.

We defined the high-risk, high-needs group as those with a Hierarchical Condition Category score at or above the 75th percentile among all Maryland FFS beneficiaries *and* who fall into the highest quintile of the Area Deprivation Index[59] among all MDPCP beneficiaries. We defined it this way because MDPCP introduced HEART payments in 2022, which target the same high-risk, high-needs population. Importantly, this subgroup analysis estimated effects from 2019 to 2022 (2019 to 2021 for standardized spending), largely before HEART payments began. Therefore, the impact estimates in this section are *not* reflective of the impacts of HEART payments but rather the impact of MDPCP for a subgroup of beneficiaries who are high risk, high needs largely before the roll-out of the HEART payments. We do not estimate the effects of HEART payments in this report.

Box 5.B. High-risk, high-needs beneficiaries make up a small fraction of all beneficiaries in Maryland

Among Maryland beneficiaries in the analysis in 2022 in the intervention group, 6.5% are considered both high risk (defined as a Hierarchical Condition Category score at or above the 75th percentile of all Maryland FFS beneficiaries) *and* high needs (defined as living in an area in the highest quintile of the Area Deprivation Index among all MDPCP beneficiaries).

Exhibit 5.11. Distribution of high-risk and high-needs beneficiaries in analysis



Note: The percentages do not sum to 100 due to rounding.

Because of the low prevalence of high-risk, high-needs beneficiaries (6.5%) (see Box 5.B), this analysis has relatively low power to detect impacts—with estimated minimal detectable effects between 4.5% and 5.0% for all-cause admissions. To account for the reduced power, similar to the main MDPCP analyses, we reference a similar category of possible impacts: those in which the impact is greater than 2% (in a favorable or an unfavorable direction) and the *p*-value is 0.10 to 0.20.[60] We also focus only on average effects across the first four years of MDPCP.

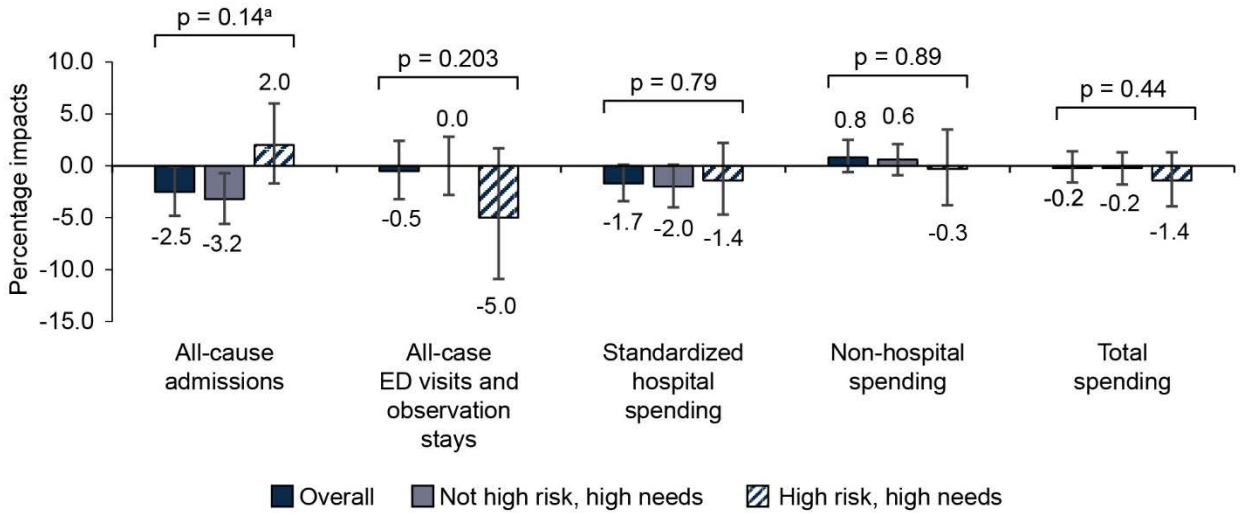
[59] The Area Deprivation Index is a measure of neighborhood disadvantage comprising indicators from the American Community Survey on housing, poverty, employment, and education. It has been shown to be predictive of health outcomes (Kind et al. 2014).

[60] Our primary test for subgroup differences tests for whether impacts among high-risk, high-needs beneficiaries differ from impacts among beneficiaries not in the high-risk, high-needs group, not whether effects for the two groups are themselves statistically different from zero.

5.7.1. Effects

- Here we estimate the effects of MDPCP on a high-risk, high-needs population separately from a group that is not high risk or high needs (Exhibit 5.12). We do not estimate the effects of HEART payments (which began in 2022), however, the estimates could be used to inform future decisions about how to support high-risk or high-need patients. We find evidence that MDPCP might have reduced all-cause admissions more for the group of beneficiaries who were not high risk and high needs than the group that was ($p = 0.14$). This suggests that high-risk, high-needs beneficiaries may require more targeted efforts (such as HEART payments starting in 2022) to reduce all-cause admissions.
- We found no evidence that MDPCP affected high-risk, high-needs beneficiaries more or less than beneficiaries who were not high risk and high needs for any other outcome we measured, including total ED visits, standardized hospital spending, non-hospital spending, or total spending.

Exhibit 5.12. Impacts of MDPCP from 2019 to 2022 were similar for beneficiaries who were and were not high risk and high needs, except for all-cause admissions, which were less favorable for the high-risk, high-needs group



Notes: (1) We defined the high-risk, high-needs group as those with a Hierarchical Condition Category score at or above the 75th percentile among all Maryland FFS beneficiaries who fall into the highest quintile of the Area Deprivation Index among all MDPCP beneficiaries. The not high-risk, high-needs group represents the remaining beneficiaries in the analysis, and the overall group includes both (Exhibit 5.11). (2) Total spending is based on the sum of non-hospital spending and standardized hospital spending. (3) Because standardized hospital spending was measured from 2019 to 2021, standardized hospital spending and total spending estimates are based on 2019 to 2021. (4) Error bars represent the 90% confidence interval. Estimates in which the intervals do not span zero are statistically different from zero at a $p < 0.10$ threshold. (5) The *p*-values above the brackets are the *p*-values for interaction between being high-risk and high-needs and being in MDPCP.

[a] The *p*-value for the interaction represents possible differences in impacts between MDPCP beneficiaries who are high risk and high needs and those who are not, which we define as those for whom the *p*-value is 0.10 to 0.20.

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

5.7.2. Drivers

MDPCP practices likely needed to provide more intensive care management services to reduce admissions for the most vulnerable beneficiaries in the high-risk, high-needs group. As we describe in Section 5.3.2, a few practices that participated in site visits said their care managers had insufficient time to provide care management services because of competing priorities and the high volume of patients who needed care management. This meant that care managers could sometimes not provide care management to all patients who needed it and, in other cases, could not provide the intensity of services needed by the sickest and most vulnerable patients. Moreover, high-risk, high-needs beneficiaries are more likely to need additional resources and services to help them meet their health-related social needs, which was a challenge for practices, as Section 5.8 describes. CMS introduced HEART payments in 2022 to provide practices more resources to support their high-risk, high-needs patients. Because HEART payments only existed in 2022, they are unlikely to affect the impact estimates that are based on a four-year period. Furthermore, early implementation challenges, which we describe in Section 5.8, might have limited practices' ability to use HEART payments effectively in 2022.

5.8. Other care changes not directly linked to measured outcomes

MDPCP practices also changed care in ways that could improve quality in the short term and outcomes in the longer term but likely did not drive effects over the relatively short period covered in the impact estimates. Here, we describe those effects of MDPCP not captured in the impact estimates—specifically, the improvements in practice capacity to provide advanced primary care now and in the future as well as specific changes that practices made for addressing behavioral health integration, population health, and health-related social needs.

Advancing long-term capacity to deliver advanced primary care. Many practices we interviewed said that MDPCP helped build lasting changes that better prepared them for future value-based initiatives. They reported that the MDPCP care transformation requirements provided a road map for how to invest in and change their care delivery so they can work toward providing more comprehensive and personalized care efficiently. Many practices also said that their advancements in primary care delivery would not have been possible without MDPCP funding, which allowed them to invest in resources needed to transform care. They said the same of the MDPCP learning supports, which they said provided them the knowledge and guidance they needed to implement specific activities and fundamentally change the practice's culture and approach to care delivery.

Behavioral health integration. CMS required MDPCP practices to ensure that beneficiaries with behavioral health needs had access to care using an evidence-based approach for integrating of behavioral health in the primary care setting. These approaches included the Primary Care Behaviorist model, in which practices co-locate behavioral health professionals in the primary care setting who address patients' behavioral health needs, and the Collaborative Care model, in which practices offer relationship-based care management from a care manager with behavioral health training and coordinate referrals to an external behavioral health provider when needed.

During MDPCP, the percentage of practices that reported that they used one of these models to address patients' behavioral health needs increased slightly from 53% at the outset of the model to 62% in 2022. These practices co-located behavioral health therapists or care managers with behavioral health training at the practice site one or more days per week (often using MDPCP funding) to provide short-term counseling to patients with depression, anxiety, and other mental and behavioral health needs. Practices we interviewed that implemented these models unanimously found them valuable, saying that it allowed them to promptly attend to patients' mental and behavioral health needs, which, in addition to improving mental health, can help patients better care for their physical health. These practices said that if they had not offered behavioral health services in the primary care setting, their patients would face months-long wait lists seeking behavioral health in the community.

Planned care and population health. Increased use of data for planned care and population health helped some practices close gaps in care that were not captured in the impact estimates. MDPCP practices reported increasing their use of data reports (including reports from their EHR, payers, or CRISP) for planned care and population health activities. For example, the percentage of practices that reported meeting and reviewing quality improvement data at least monthly increased gradually from 45% at the outset of MDPCP to 79% in 2022. These workflows helped improve the number of patients who receive timely preventive care, such as health screenings and other preventive services, that helps them avoid developing new health problems or experiencing deteriorations in their health statuses.

Still, the challenges to planned care and population health activities that many practices described likely limited the effectiveness of these practice changes. For example, they described how practitioners rarely had time to review data reports. They also said that, despite practice outreach, patients who are non-compliant make it difficult to close their gaps in care. Regardless, access to data reports, as well as creating workflows to review and act based on those data reports, are important steps to improving the practice's capacity for efficient, data-driven care that can improve the quality of care patients receive.

Health-related social needs. MDPCP required that Track 2 practices facilitate patient access to resources that help them meet their health-related social needs. The percentage of MDPCP practices that reported screening all patients for unmet social needs increased gradually from 21% at the outset of MDPCP to 64% in 2022. But practices we interviewed described major challenges with the second step of this requirement, which involves connecting patients to the resources they need. Most notably, practices we interviewed highlighted the lack of available resources in the community to meet patients' health-related social needs, and a few also described having insufficient staff and resources to facilitate and track referrals.

In 2022, MDPCP began providing HEART payments to participating practices to support better care and outcomes for beneficiaries with significant health-related social needs. Although these payments have the potential to help practices support high-risk, high-needs beneficiaries, early implementation evidence indicates several challenges. For example, many practices described the administrative complexity of restricting who is eligible for services, especially when HEART

eligibility changes quarterly, and restricting how funds can be used, which made it difficult for practices to use HEART payments for resources that patients actually needed. In addition, many practices reported needing clearer guidance from CMS and more time to prepare for HEART payments. As a result, many practices reported that they were unable to make meaningful changes using the HEART payments in 2022.

Despite challenges linking patients to resources for health-related social needs and using HEART payments effectively, implementing screenings for health-related social needs is an important step in practice transformation; it lays the groundwork for eventually connecting patients to social resources and allows primary care practices to newly consider social needs as an aspect of comprehensive care.

Chapter 6. Likely Medicare Spending and Service Use Effects of Switching Maryland to the Prospective Payment System

Key findings

- According to the original agreement between Maryland and the Center for Medicare & Medicaid Services, if the model *does not meet* cost and quality requirements, the Center for Medicare & Medicaid Services has the option to transition Maryland to Medicare's prospective payment system.
- If Maryland switched to the prospective payment system, we estimate long-term total Medicare fee for service spending in Maryland would decrease by 13% relative to actual Maryland spending in 2022, amounting to total annual Medicare savings of $1.3 billion per year.
- Our design accounts for likely behavioral responses, such as increases in hospital volume, that influence Medicare savings if Maryland were to switch to the prospective payment system. There is inherent uncertainty, however, in estimating how spending would change; we estimate savings could range from 7.8% to 18%, or $0.8 billion to $1.8 billion per year.
- These savings estimates are driven by reductions in hospital spending because of price reductions for hospital services that would more than offset estimated increases in volume of services.
- Switching to the prospective payment system would likely worsen access, quality, and equity outcomes, some of which may be especially disruptive in the short term. Our results for spending and service use **should not** be interpreted as a comprehensive picture of all changes that would occur in Maryland after switching to the prospective payment system.

6.1. Background

In designing savings targets under the MD TCOC Model, the Center for Medicare & Medicaid Services (CMS) aimed to put Maryland on a path to move total per-capita Medicare spending levels in line with those of its peer states. One way to achieve this spending goal is by allowing the state to continue to set relatively high prices for all hospital services (a result of the all-payer rate setting system in place since the 1970s) while decreasing reliance on hospital care (facilitated, in large part, by hospital global budgets). Lower hospital volume could more than offset higher hospital prices in Maryland, leading to lower *total* per-capita Medicare spending that is more in line with peers, assuming non-hospital spending in Maryland does not grow excessively.

According to the original agreement between Maryland and CMS, if the model *does not meet* cost and quality requirements, CMS has the option to transition Maryland to the prospective payment system (PPS) for hospitals. In this chapter, we focus on estimating how switching to PPS would affect *long-term* Medicare spending and service use in the state. Medicare hospital payment rates in Maryland are substantially higher than in the rest of the country, which by itself would suggest very large declines in Medicare spending (Haber et al. 2019). Such a transition, however, is likely to disrupt the health care market in Maryland, leading to behavioral responses by hospitals and other providers that could offset some of the apparent savings to Medicare from

price differences. Exhibit 6.1 describes important behavioral responses likely to influence Medicare spending in Maryland after switching to PPS based on an analysis of the current model components, a review of the related literature, and interviews with six experts on Maryland's health care system (see Appendix F.2).[61]

Exhibit 6.1. Moving from the Maryland Total Cost of Care agreement to PPS is likely to increase hospital service use (inpatient and outpatient), offsetting some of the savings because of lower prices

Behavioral response	Rationale
Increases in inpatient admissions and outpatient services provided in the hospital	Global budgets create strong incentives for hospitals to shift care away from the hospital because hospitals can retain some of the revenue for these services in their global budget while not incurring the operating costs to provide the service (see Chapter 1). To regain some of the lost revenue after switching to PPS, hospitals would have an incentive to increase the volume of inpatient hospital care, especially for high-margin care, and move outpatient services currently provided in the community (such as certain ambulatory surgeries and chemotherapy) back to the hospital where Medicare pays higher rates. This could occur by hospitals simply shifting care from non-hospital providers within their system or by competing with other non-hospital providers to add volume.
Changes in hospital designations	Outside Maryland, Medicare payments to certain designated providers, such as long-term acute care hospitals and rehabilitation facilities, are higher than standard PPS payments because of longer lengths of stay (CMS 2018). If Maryland hospitals transitioned to payment under PPS, they have an incentive to seek designations that would enable them to secure higher Medicare payments.
Increasing coding intensity	Unlike the rest of the country, Maryland hospitals have never been reimbursed based on diagnosis related groups. If Maryland hospitals transitioned to payment under PPS, they would have an incentive to invest in coding procedures for Medicare claims that maximize their payments.

PPS = prospective payment system.

Switching to PPS changes incentives for hospitals, likely leading to increases in hospital service use (inpatient and outpatient) as hospitals seek to regain some of the revenue and margins lost by lower prices. As such, these revenue-enhancing behavioral responses are likely to offset some of the savings from price decreases alone if Maryland were to switch to PPS. Therefore, estimates that do not account for behavioral responses are likely to overstate the savings that switching to PPS would generate for CMS over the long term. Here, long term refers to the period when the expected behavioral responses have occurred. Although the timeline of when each response would occur is complex, the experts we interviewed did note that such a shift would likely take at least several years.

[61] We selected people to interview based on their expertise in Medicare payment incentives under FFS and global budgets as well as their work experience within (or focusing on) the Maryland health care system. The experts are affiliated with several organizations, including the Commonwealth Fund, the Heath Services Cost Review Commission, Johns Hopkins University, Mathematica, the Maryland Hospital Association, and the Urban Institute.

Importantly, our quantitative results should not be interpreted as a comprehensive picture of all changes that would occur in Maryland. Switching to PPS would likely *worsen* outcomes we do not analyze related to access, quality, and equity. For example, the experts we interviewed noted the high likelihood that hospitals would be allowed to charge higher commercial prices to offset sharp reductions in Medicare revenue, resulting in lower accessibility and affordability for patients with poorer commercial insurance. Although our focus for the quantitative analysis is on changes to Medicare spending, we return to the topic of additional implications at the end of the chapter.

6.2. Quantitative methods

This analysis and its methods differ substantially from our approach to estimating the statewide effects of the model (see Chapter 2). Most importantly, we focus on calculating the differences between Maryland and a newly selected set of comparable benchmark areas outside Maryland in a single year (2022). A summary of our approach appears below (and more methodological details on the matching approach are available in Appendix F.3 and F.4).

Our methods can be described in three key steps:

1. **Develop matched sets for each Maryland Public Use Microdata Area (PUMA) to create national benchmarks**

We matched each PUMA in Maryland to PUMAs outside the state based on characteristics that empirical analysis suggests are important predictors of spending outcomes, such as average Hierarchical Condition Category (HCC) scores, demographics, and cost of living. Our approach assumes that Maryland's per-capita Medicare spending would eventually move toward the per-capita spending levels in areas that resemble Maryland on these characteristics. These areas have long been under the PPS system, so they represent the prices and per-capita volumes of hospital care and other care that Maryland would resemble after switching to PPS. Our approach, therefore, factors in price and volume differences between Maryland and similar areas covered under PPS. We intentionally *did not match* on characteristics that are likely to change after switching to PPS, such as the outcomes themselves. After matching, we confirmed sufficient balance between Maryland and the matched PUMAs on the specified matching variables.

2. Further subdivide matched sets into low and high per-capita spending benchmarks

To account for the inherent uncertainty in forecasting Maryland's level of spending after switching to PPS, we created low- and high-spending benchmarks to represent a range of potential outcomes instead of including estimates of statistical precision. We created these by subdividing matched PUMAs based on the median spending level of the benchmark PUMAs in each matched set. The low / high spending benchmark captures where Maryland might head if unobserved differences would—all else equal—make Maryland spending lower / higher than the average benchmark.

3. For each PUMA in Maryland, compare outcomes in Maryland measured in 2022 with projected outcomes in Maryland under PPS based on national benchmarks

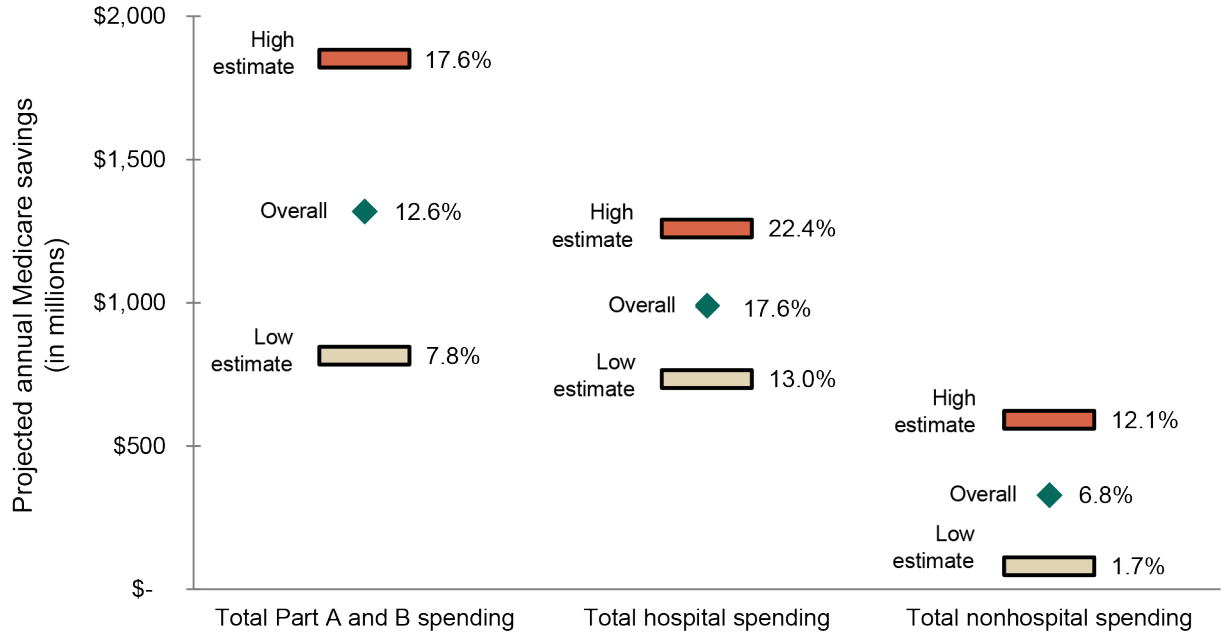
We compared the *projected* mean outcome for Maryland after switching to PPS (represented using the national benchmarks) with the actual mean outcome in Maryland in 2022 using adjusted linear regression. The difference captures the projected per-capita change in the outcome if Maryland switched to PPS. We translated the per-capita results into percentage differences (relative to the actual mean outcome value in Maryland in 2022) and, for spending outcomes, total annual Medicare savings by multiplying the per-capita results (expressed in 2022 dollars) by the weighted number of Maryland FFS patients *currently* in our sample (N = 721,580). It's possible the Medicare FFS population could change over the long term because of population growth within the state or movement into Medicare Advantage, which we expect to rise if Maryland switched to PPS.

6.3. Results

We project that, after switching to PPS, long-run total per-capita Medicare FFS spending (Part A and B) in Maryland would decrease by 13% relative to actual Maryland per-capita spending in 2022, or $1,828 per person per year (Exhibit 6.2).[62] This amounts to total annual Medicare savings of $1.3 billion per year, with a range of $0.8 billion to more than $1.8 billion (Exhibit 6.3).

[62] We performed this analysis for several key outcomes using data from 2019 as a robustness check on the influence of the COVID-19 pandemic. The results in 2019 were generally consistent with findings in 2022. We discuss 2019 results in more detail in Appendix F.5.

Exhibit 6.2. Projected annual Medicare savings from Maryland switching to Medicare PPS are driven largely by reductions in hospital spending



Source: Mathematica's analysis of 2022 Medicare claims files.

Notes: (1) In this exhibit, we illustrate annual savings estimates (in millions) for total (Part A and B), hospital, and non-hospital spending if Maryland switched to PPS. (2) The label next to each icon shows the corresponding estimated percentage change relative to actual spending amounts for the category in Maryland in 2022.

PPS = prospective payment system.

We estimate that the decline in total Medicare spending would be driven primarily by an 18% decline in per capita hospital spending, totaling nearly $1 billion in annual savings (Exhibit 6.3). The decline in hospital spending is attributable to a significant drop in inpatient hospital spending (20%) and outpatient hospital spending (13%). Estimated reductions in spending are the result of large price reductions for hospital services that are not fully offset by the estimated increase in volume. For example, we find that price per inpatient stay would fall by 25% compared with the expected increase in acute stays of just 5.7% (Exhibit 6.4). The net result is a substantial reduction in annual inpatient hospital spending.

The remainder of the reduction in total Medicare spending is explained by a 6.8% decline in non-hospital spending. Under the model, certain services—such as surgeries and chemotherapy—were moved from hospital to non-hospital settings not covered under global budgets. Under PPS, some services would likely be moved back into the hospital as volumes rise under FFS incentives. As services move back into the hospital, non-hospital spending in Maryland would decline. Results for post-acute spending are less conclusive. We project relatively small reductions in post-acute spending in Maryland compared with the overall benchmark, consistent with undoing incentives created by global budgets to move care to post-acute settings. Our range of estimates do not, however, rule out *increases* in post-acute spending from substantial increases in hospital use (and therefore post-acute care use) combined with hospitals in Maryland

facing (for the first time) strong diagnosis-related group incentives to reduce lengths of stay and shift patients to post-acute care.

Lastly, we estimate small (in absolute dollars) *increases* in spending to certain designated providers, including inpatient rehabilitation facilities (21%) and long-term acute care hospitals (LTACs) (180%). These findings are consistent with the expected behavioral responses in Exhibit 6.1.

Exhibit 6.3. Switching Maryland to Medicare PPS would result in substantial reductions in total Medicare FFS spending, driven primarily by reductions in hospital spending

Spending category	Medicare spending in Maryland in 2022, actual annual per capita Dollars (1)	Benchmark (annual per capita Dollars adjusted), mean (low, high spending) (2)	Projected change in Maryland spending, overall (range)		
			Annual per capita Dollars (3)	Percentage (4)	Projected annual Medicare savings ($ millions) (5)
Total Part A and B	$14,568	$12,739 ($12,000, $13,438)	-$1,828 (-$2,568, -$1,130)	-12.6% (-17.6%, -7.8%)	$1,319 ($1,853, $816)
Hospital spending, total	$7,809	$6,437 ($6,062, $6,791)	-$1,372 (-$1,747, -$1,018)	-17.6% (-22.4%, -13.0%)	$990 ($1,261, $735)
Inpatient	$5,299	$4,252 ($3,936, $4,542)	-$1,047 (-$1,363, -$758)	-19.8% (-25.7%, -14.3%)	$755 ($984, $547)
Outpatient	$2,510	$2,185 ($2,127, $2,249)	-$325 (-$384, -$261)	-13.0% (-15.3%, -10.4%)	$235 ($277, $188)
Non-hospital spending, total	$6,759	$6,302 ($5,938, $6,647)	-$457 (-$821, $-112)	-6.8% (-12.1%, -1.7%)	$329 ($592, $81)
Non-hospital spending excluding PAC	$5,641	$5,230 ($5,008, $5,450)	-$412 (-$633, -$191)	-7.3% (-11.2%, -3.4%)	$297 ($457, $138)
PAC spending	$1,118	$1,073 ($930, $1,197)	-$45 (-$188, $79)	-4.0% (-16.8%, 7.1%)	$32 ($136, -$57)
Inpatient rehab facility spending, total	$236	$284 ($255, $313)	$48 ($19, $77)	20.5% (8.0%, 32.9%)	-$35 (-$14, -$56)
LTAC hospital spending, total	$29	$81 ($66, $94)	$52 ($37, $65)	179.8% (128.4%, 223.7%)	-$38 (-$27, -$47)

Source: Mathematica's analysis of 2022 Medicare claims files.

Notes: (1) Columns 1 and 2 show the mean per-capita outcomes for Maryland and benchmark groups, respectively. (2) Column 3 shows the difference between the mean outcome in the benchmark group and Maryland. (3) Column 4 shows the estimated percentage change relative to spending in Maryland (column 1). (4) Column 5 shows estimated annual Medicare savings (in $ millions) derived by multiplying the per-capita values in column 3 by the weighted number of Maryland FFS patients in our sample (N = 721,580).

FFS = fee for service; LTAC = long-term acute care hospital; PAC = post-acute care; PPS = prospective payment system.

Exhibit 6.4. Projected reductions in prices are larger than projected increases in major service use categories

Outcome (units)	Maryland outcome in 2022, actual (1)	Benchmark (adjusted), overall (low; high spending) (2)	Benchmark mean minus actual (range) (3)	Projected percentage change in Maryland (range) (4)
Price per inpatient stay ($ per stay)	$21,162	$15,925 ($15,176, $16,575)	-$5,237 (-$5,986, -$4,588)	-24.7% (-28.3%, -21.7%)
Inpatient acute care stays (# per 1,000 person)	220	232 (228, 236)	13 (9, 17)	5.7% (4.0%, 7.6%)
Unique outpatient ED visits and observations stays (# per 1,000 person)	384	413 (419, 410)	29 (35, 26)	7.7% (9.2%, 6.8%)

Source: Mathematica's analysis of 2022 Medicare claims files.

Notes: (1) Columns 1 and 2 show the mean values for Maryland and benchmark groups, respectively. (2) Column 3 shows, for each outcome, the difference between the mean values in the benchmark group and Maryland. (3) Column 4 shows the estimated percentage change relative to actual spending in Maryland (column 1).

ED = emergency department; PPS = prospective payment system.

6.4. Access, equity, and quality implications

Our analysis is primarily focused on the effects of moving to PPS on Medicare spending and service use outcomes, but there are important implications for quality, access, and equity should Maryland transition to PPS. Here, we describe three qualitative predictions based on information gathered from expert interviews.

First, there is a high likelihood that hospitals would be allowed to charge commercial payers higher prices to offset part of the reduced Medicare revenue. In most of the country, commercial hospital rates are higher than Medicare rates, partly because commercial hospital prices are unregulated, allowing hospitals to negotiate with commercial payers for higher rates (Jain et al. 2019). In Maryland, the Heath Services Cost Review Commission (HSCRC) sets rates across all payers. Although the extent to which commercial rates will change (and when that change would occur) is uncertain, increasing commercial rates could result in higher premiums that lead to lower accessibility and affordability, especially for low-income populations or patients with poorer access to commercial insurance coverage.[63]

Second, switching to PPS could worsen access because of more hospital closures in the state. Closures would likely be concentrated among hospitals that rely heavily on public payers (because Medicaid prices would also go down given regulations that Medicaid cannot pay higher prices than Medicare and not all would be able to negotiate higher prices from commercial

[63] Part of the uncertainty stems from whether HSCRC would continue to regulate prices for commercial payers if Maryland switched to PPS. For example, HSCRC might continue to regulate commercial rates but allow for a much larger private–public differential than it currently allows, leading to higher commercial rates. Or HSCRC could stop regulating commercial rates altogether, leading to systems more like the rest of the country.

payers) and hospitals that have relatively small operating budgets (because they would be more vulnerable to swings in volume). As a result, we expect closures in rural and safety net hospitals.

Third, switching to PPS would likely lead to the rollback of public health investments that are financed by the model. Currently, the model funds various grants and information supports at least partly through the all-payer rate setting system and hospital global budgets. Examples include population health grants (see Chapter 2.7), such as those being used to support behavioral health interventions, and health information supports, such as the Chesapeake Regional Information System for our Patients (CRISP). Unless they are replaced by other means, such as through participation in national Medicare models, eliminating these investments could lead to worse outcomes for patients in Maryland.

Finally, while this chapter focuses on the likely spending effects of switching to PPS, several other effects of the model we estimated in this report could be affected. For example, reductions in hospital use and gains on quality measures (see Chapter 2) or gains in health equity (see Chapter 4) could stall or even backslide if Maryland were switched to PPS.

Chapter 7. Conclusion

The MD TCOC Model tests whether state accountability for health care costs and quality, along with aligned incentives for providers to transform care, can reduce Medicare spending and improve health for all Marylanders. In this chapter, we summarize the MD TCOC Model's design, the main evaluation findings over the first four years (2019 to 2022), the study's limitations, and next steps for the evaluation.

7.1. MD TCOC Model goals and design

The MD TCOC Model builds directly from the Maryland All-Payer Model (MDAPM), which ran from 2014 to 2018 and focused on hospital costs and quality. The MD TCOC Model expands state accountability beyond the hospital, with the state committing to generating savings for total (not just hospital) spending and for meeting broader quality and population health goals (see Box 7.A). In 2018, Maryland had the highest risk-adjusted per-capita Medicare spending of any state, driven by high hospital prices (Machta et al. 2021). CMS set annual savings targets that grew over time so that Maryland's per-capita Medicare spending would, by the end of the MD TCOC Model, equal the average among peer states. CMS and Maryland continued the all-payer global budgets that began under MDAPM and expanded incentives and supports to engage a wider range of providers in care transformation throughout the state.

Box 7.A. Cost and quality goals in the MD TCOC Model

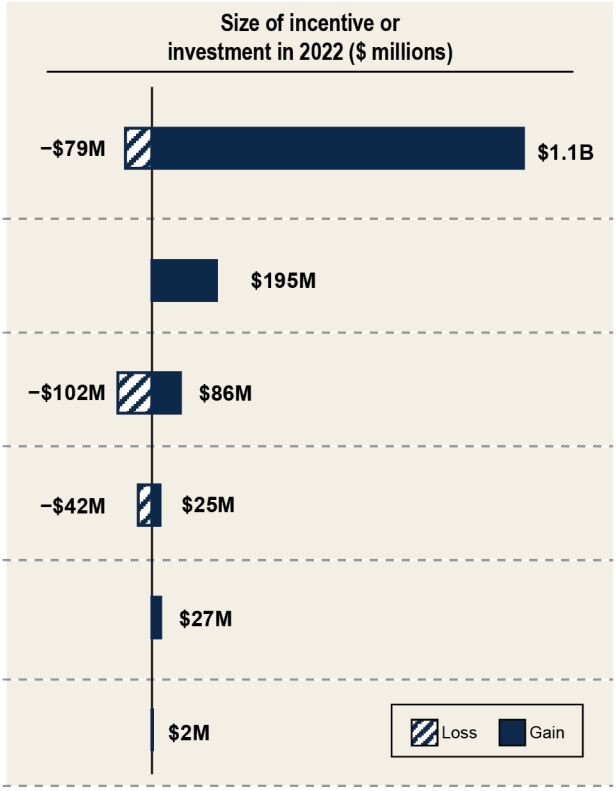
- Reduce total per-capita Medicare fee-for-service spending
- Reduce preventable hospital admissions
- Reduce hospital readmissions by reducing within-hospital disparities
- Improve timely follow-up after acute exacerbations of chronic conditions
- Improve population health by reducing mean body mass index, diabetes incidence, overdose deaths, severe maternal morbidity, and children's asthma-related emergency department visits.

Sources: State agreement, Statewide Integrated Health Improvement Strategy, Outcomes-Based Credits.

The MD TCOC Model contains many components, which we have organized by the statewide size of the incentives or investments in 2022 to help identify what might be driving care changes in the model (Exhibit 7.1).

Exhibit 7.1. Hospital global budgets, the Maryland Primary Care Program, and quality adjustments to global budgets were the largest potential drivers of change in the MD TCOC Model in 2022, as measured by the size of the statewide incentive or investment

MD TCOC Model component	Measure of incentive size or investment
1. All-payer hospital budgets	Retained revenue: The difference between a hospital's revenues based on its global budget and the lower revenues it would have earned due to volume reductions under an FFS schedule[a]
2. Maryland Primary Care Program	Payments to participating practices and their supporting Care Transformation Organizations
3. Quality adjustments to hospital global budgets	Adjustments to hospital budgets based on each hospital's performance on quality measures
4. Medicare Performance Adjustment	Adjustments to hospital budgets based on each hospital's performance on total cost of care for Medicare FFS beneficiaries
5. Regional Partnership Catalyst Grants	Competitive grant funding for hospitals for diabetes prevention and management services and for behavioral health crisis services
6. Episode Care Improvement Program	Amount hospitals received for reducing Medicare episode costs while meeting quality targets



Note: (1) Blue-shaded bars are the amounts providers earned as incentive payments (from higher performance on cost or quality outcomes) or received as investments from CMS (for the Maryland Primary Care Program) or from CMS and other payers (for Regional Partnership Grants) in care transformation. (2) Blue-hatched bars are the amounts that providers lost in incentive programs (from lower performance). (3) MDPCP payments in the figure capture CMS payments alone (they do not include state investments) and include Track 1 and 2 practices (MDPCP began a new track 3 in 2023, which is not included).

[a] Hospitals that exceeded volumes built into their global budgets had negative retained revenue.

B = billion; FFS = fee-for-service; M = million.

The largest incentives in the MD TCOC Model are the hospital global budgets, which began in 2014 with the MDAPM. At the start of each year, Maryland's regulatory authority—the Health Services Cost Review Commission (HSCRC)—sets a budget across all payers individually for each hospital in the state. These budgets encourage hospitals to reduce avoidable hospital use by improving beneficiaries' health or shifting care to lower-acuity settings. When hospitals reduce volume, their variable operating costs decrease but their revenues remained fixed, generating net income. In 2022, hospitals statewide had about $1.1 billion in retained revenue. Retained revenue is the difference between a hospital's revenues based on its global budget and the lower revenues it would have earned due to volume reductions under an FFS schedule.

The second largest component of the model is the Maryland Primary Care Program (MDPCP), which reached almost half of all Medicare FFS beneficiaries in the state. In 2022, CMS paid the 508 participating practices and Care Transformation Organizations that supported them almost $200 million to improve primary care in select domains, such as comprehensiveness and coordination. Care Transformation Organizations, often run by health systems, are entities that provide partnering practices with care managers and other supports to help practices meet care delivery requirements.

The third largest incentives in the MD TCOC Model are the adjustments (positive or negative) that HSCRC made to each hospital's all-payer global budgets based on its performance on a range of quality measures. In 2022, hospitals across the state lost $102 million and gained $86 million (with some hospitals losing and others gaining) based on their performance on quality measures.

The MD TCOC Model includes several other smaller incentives and supports, including (1) placing some accountability on hospitals for the total cost of care via adjustment to their budgets that are based on the cost of care for attributed Medicare beneficiaries, (2) grants to hospitals and their partners for services to prevent or manage diabetes and behavioral health crises, (3) incentives for hospitals and specialists to improve the quality and efficiency of episodes of care that can last weeks or months and involve multiple providers and sites of care.

7.2. Main findings from the evaluation

7.2.1. Statewide effects for Medicare FFS beneficiaries

Approach. Although MDAPM and MD TCOC are distinct models, established by separate legal agreements, we consider them parts of a single overarching Maryland Model (which we refer to as "the model") when estimating model effects. We estimate model effects each year from 2014 to 2022 as the difference between the outcomes that occurred in Maryland and those that we, using a matched comparison group, estimate would have happened in the state without any of the changes CMS and Maryland made starting in 2014. We calculate average effects during the MD TCOC period (2019 to 2022) and compare them with effects at the end of the MDAPM period (2017 to 2018).

Medicare FFS spending. During the MD TCOC period (2019 to 2022), the model reduced total Medicare Part A and B spending by 2.1%, which was more than the 1.1% at the end of the MDAPM period (2017 to 2018), signaling further improvement. Over the first three years of the MD TCOC period (2019 to 2021), the model reduced total Medicare spending—including non-claims payments—by $689 million.[64] The model reduced spending because, from 2014 to 2019, HSCRC limited the growth in hospital budgets throughout the state to meet savings targets. From 2020 to 2022, HSCRC let hospital spending grow more quickly, but restraints in hospital growth in earlier years meant that hospital spending during the 2019 to 2022 period was still lower than

[64] Because non-claims payments in 2022 were not available in time for this report, we estimated aggregate effects on total Medicare spending from 2019 to 2021.

what we estimate would have occurred without the model. The model also increased non-hospital spending, as the model encouraged hospitals to shift care to lower-acuity non-hospital settings. But the hospital savings exceeded the increases in non-hospital sending, leading to savings overall.

In 2021 and 2022, however, the model reduced total Part A and B spending less than it did in 2019 and 2020, and the estimate for 2022 was not statistically different from zero. Two factors converged to decrease savings in 2022 (Exhibit 7.2).

- **Lower hospital savings in 2022.** From 2020 to 2022, the model effectively prioritized stability in hospital financing during and after the COVID-19 pandemic over generating larger hospital savings. When volumes dropped in 2020 as patients avoided the hospital early in the COVID-19 pandemic, HSCRC guaranteed that hospitals could keep their full budget, whereas hospitals nationally lost FFS revenue. Hospitals that could not increase prices enough in 2020 to receive their full budgets were allowed to do so in 2021 and 2022 so that they received their full budgets across those years, after accounting for federal Provider Relief funding.[65] Furthermore, when setting hospital global budgets, HSCRC aimed to let budgets grow such that the state would maintain but not necessarily increase its Medicare savings amounts. HSCRC could do this because, based on earlier restraints in hospital spending, the model did not need to generate larger savings to meet the savings targets.[66] Finally, when projecting whether total Medicare spending would meet national growth, HSCRC relied on CMS actuaries' projections that Medicare spending would rebound substantially in 2022 after the COVID-related drops in 2020 and 2021. The actual national rebound was less than projected, meaning that Medicare hospital spending grew faster in Maryland than it did nationally and in the comparison group in 2022. As a result, the model generated less hospital savings in 2022 than earlier years.
- **Higher non-hospital spending increases.** With 2019 and 2020 as exceptions to the overall pattern, the model has steadily increased non-hospital Part A and B spending each year (from 2014 to 2022) as the model has continued to encourage hospitals to shift care to non-hospital settings. The model has increased non-hospital spending in a wide range of categories, including Part B drugs (which cover chemotherapy) and ambulatory surgical care.

Further, when we account for CMS payments made outside of medical claims to support care transformation in Maryland and the comparison group, the savings estimates are less favorable (Exhibit 7.2). These non-claims payments support the MDPCP in Maryland and similar primary care efforts in the comparison group (such as Comprehensive Primary Care Plus). The payments

[65] Although hospitals receive global budgets, they still bill Medicare and other payers per service they provide. If actual volumes fall below projected, hospitals can increase their prices so that, by the end of the year, total revenue (price times volume) matches their budget. HSCRC places limits (called corridors), however, on how much hospitals can increase their prices. In 2020, many hospitals hit that limit, so they needed to continue to charge higher prices in 2021 (and some in 2022 as well) to make up for revenue that fell short of the budget in 2020.

[66] During the MD TCOC period (2019 to 2022), the provision of the state agreement that effectively constrained Medicare spending growth were the guardrails: that spending could not grow faster than the nation in two consecutive years and could not grow by 1 percentage point or more than the nation in any year.

are higher in Maryland than the comparison group, however, because the level of participation in MDPCP is higher. MDPCP payments grew from 2019 to 2022 as more practices joined and others moved to advanced tracks with higher payments. Our best estimate is that the model *increased* total spending in 2022 after we account for non-claims payments.[67]

The state has taken steps to increase savings in 2023, spreading the responsibility across hospitals and commercial payers. Specifically, HSCRC made a one-time adjustment that lowered all-payer hospital payments and further lowered Medicare payments specifically.[68] Finally, Maryland increased the public–private differential (that is, the difference in prices that public payers, Medicare and Medicaid, pay compared with commercial payers such as CareFirst). This last change was net neutral to hospitals, meaning that commercial payers paid more to offset reductions in public payer payments.

Exhibit 7.2. The model generated less hospital savings in 2022 than in 2019 and increased non-hospital spending

Spending category	Estimated model impact ($ per beneficiary) 2019	2022	Interpretation
Spending in Medicare Part A and B claims			
Hospital spending	-$589	-$338	Model generated less savings in hospital spending in 2022
Non-hospital spending	$125	$313	Model increased Part A and B non-hospital spending more in 2022
Combined	-$464	-$25	Combined, the model reduced Part A and B spending much less in 2022 ($25 PBPY) than in 2019 ($464).
Spending outside Part A and B claims			
Non-claims payments for care transformation	$23	$135 (projected[a])	Model increased payments outside claims more in 2022 (mainly due to MDPCP)
Total spending (Part A and B claims and spending outside claims)			
Total Part A and B plus non-claims payments	-$441	$110 (projected[a])	Taken together, these changes mean our best estimate is the model *increased* total spending in 2022 (by $110 PBPY) compared to decreasing total spending in 2019 by $441.

[a] Because non-claims payments were not available for 2022 at the time of analysis, we projected the impact on these payments in 2022 using (carrying forward) the estimated impact on these payments in 2021. We expect impacts on these non-claims payments to be similar in 2022 because MDPCP payments, the main driver of non-claims payments in Maryland, were similar in 2022 to what they were in 2021. Because the impact on this cost component is projected, the impact on total Medicare spending including these payments is also projected (though estimates for all other components are based on actual spending in 2022).

MDPCP = Maryland Primary Care Program; PBPY = per beneficiary per year.

[67] Because non-claims payments were not available for 2022 at the time of analysis, we projected the model impact on these payments based on the impact we observed on them in 2021. MDPCP payments, the main driver of non-claims payments in Maryland, were similar in 2022 to what they were in 2021.

[68] Although HSCRC typically sets all-payer rates, it can now use the Medicare Performance Adjustment to change the prices that Medicare pays compared with other payers.

Service use and quality. During the MD TCOC period (2019 to 2022), the model substantially reduced all-cause admissions (16.2%), preventable admissions (16.8%), unplanned readmissions (8.9%), and outpatient emergency department (ED) visits (5.9%) and increased timely-follow up (2.6%). For most of these outcomes (all but timely follow-up), the impacts were larger during the MD TCOC period than they were at the end of the MDAPM period, signaling further improvement.

The combination of significant baseline room for improvement and hospital responses to quality-adjusted global budgets likely drove much of these favorable effects. In 2013, before the model began, Maryland's risk-adjusted all-cause hospitalization rate was among the top 10 states in the country. The hospital global budgets created strong incentives for hospitals to reduce preventable hospital care and the quality adjustments further encouraged efforts to reduce preventable admissions, reduce readmissions, and increase timely follow-up (measures that all factor into quality adjustments to hospital budgets). In a survey, three-quarters of hospitals reported that global budgets and the quality adjustments to them drove the hospitals to invest "a lot" in care delivery changes. Hospitals took a variety of approaches to reduce preventable acute care. Some they could implement on their own (such as enhancing discharging planning), and others required coordinating with providers outside of the hospitals (such as working with skilled nursing facilities to better detect and prevent exacerbations requiring a hospital readmission). Hospital efforts to reduce preventable hospital use have also helped hospitals to maintain roughly steady hospital margins (averaged across the state), even as HSCRC limited hospital budget growth (see Box 7.B).

Box 7.B. Reductions in preventable hospital use helped maintain hospital margins

- Over the length of the model (2014 to 2022), hospital net operating margins have been near or above what they were in baseline (2011 to 2013).
- This has occurred despite HSCRC limiting growth in hospital budgets.
- Hospitals were able to maintain margins, in part, by reducing volume, which lowered their operating costs while their revenues remained fixed at the global budgets. ◢

Exploratory analyses estimating the model's effects on ED discharge destination suggest that up to 38% of the model's effects on admissions could be the result of hospitals shifting patients who would have been admitted to hospital observation stays. This shift could be an efficiency gain if observation stays are perfect quality substitutes for admissions, but it might also have unintended consequences related to patient financial burden (Kangovi et al. 2015).

MDPCP might have contributed modestly to the reduction in hospital use. MDPCP reached about 50% of all Medicare FFS beneficiaries in the state in 2022, and practices used funding to hire care managers who helped at-risk patients manage their chronic conditions, preventing acute exacerbations that would require hospitalizations. The effect on admissions were modest (2.5%), however, for those attributed to MDPCP practices and would be smaller (about 1.3%) when averaged over all Medicare FFS beneficiaries in the state.

Although the average effects on service use and quality during the MD TCOC period were favorable, they leveled off for many outcomes from 2020 to 2022. A combination of past model successes and the COVID-19 pandemic depressed hospital use in the state, making it more difficult for Maryland hospitals and primary care practices to further decrease hospital use relative to the nation. Further, the COVID-19 pandemic likely disrupted planned model-driven interventions as providers focused their attention on COVID-19 cases. The model effects continued to grow for outpatient ED visits through 2022, which might be in part because outpatient ED visits rebounded in the comparison group more than hospital admissions did, creating more room for the model to improve that outcome.

7.2.2. Medicaid trends

All-cause hospitalizations, outpatient ED visits, and preventable hospitalizations declined for Medicaid and CHIP enrollees by 35% to 45% from 2014 to 2021,[69] consistent with the overall goals and incentives for the model and the trends seen for Medicare beneficiaries. The hospital global budgets are all payer, so Medicaid and CHIP enrollees likely benefited from the same interventions hospitals developed to reduce preventable hospital care for Medicare beneficiaries. About half the declines from 2014 to 2021 occurred after the COVID-19 pandemic, however, so they are likely because of patients avoiding hospital care during that time.

7.2.3. Model effects on disparities for Medicare FFS beneficiaries

During the baseline period (2011 to 2013), there were significant disparities in preventable hospital admissions, unplanned hospital readmissions, and timely follow-up for beneficiaries based on race (Black compared with White beneficiaries) and place (those living in high versus low social vulnerability areas, as defined by the Social Vulnerability Index). The model narrowed the Black–White and high–low vulnerability disparities by 19% to 40%, with most of this gap narrowing occurring by the end of the MDAPM period.

These large reductions are somewhat surprising, especially because they occurred before Maryland had explicitly committed to reducing disparities. Nonetheless, these effects were plausibly driven by hospital responses to global budgets via a few different mechanisms. First, interventions targeting all beneficiaries could have a larger absolute effect on beneficiaries with worse baseline outcomes simply because there is more room for improvement. We do see lower-quality outcomes during baseline for Black beneficiaries and beneficiaries living in high vulnerability areas. Second, in interviews, many hospitals described targeting interventions, such as enhanced discharge planning, to those at greater risk of hospital admission or readmission. Because of historic inequities in care, this strategy could lead to Black beneficiaries or those living in high vulnerability areas to be more likely to receive new interventions under the model and thus benefit more.

[69] Data were not available for 2022 or before 2014.

Finally, some hospitals had programs that could directly target disparities in race or place. In our hospital survey, 68% of respondents reported investing a lot in efforts to make health outcomes more equitable, employing efforts such as analyzing data by race or the addition of new staff or roles with a focus on health equity. Even if these individual efforts were not directly incentivized by the model, they could have worked synergistically with other efforts that hospitals were pursuing in response to model incentives. Maryland hospitals are financially motivated to reduce preventable hospital use, and many hospitals—in Maryland and across the nation—are also committed to reducing disparities as part of their broader mission. Hospitals could leverage their resources and experience to reduce preventable hospital use to further work to address disparities.

Although the disparity results are generally favorable, secondary analyses temper them some. As noted above, the model has increased hospital use of observation stays as a substitute for admissions. Although hospitals have done this for all Medicare beneficiaries, they have done this more for Black beneficiaries and those living in high vulnerability areas—and this substitution alone could account for up to 40% of the observed model-related reductions in disparities. This is consistent with a study (Figueroa et al. 2020) that found, nationally, disparities in preventable admissions have declined in the past decade largely because of shifting inpatient care to observation stays. This raises questions about whether preventable admissions or readmissions fully capture the intended quality concept (that is, preventing the need for hospital-level care). It is also not clear whether observation stays are always good substitutes for admissions, including some evidence to suggest observation stays can be more financially burdensome to patients because of rules around insurance coverage and out-of-pocket expenses (Kangovi et al. 2015). This could be particularly important for beneficiaries living in vulnerable areas or those who have been historically marginalized.

7.2.4. The added effect of MDPCP

Because CMS and Maryland are investing substantially in MDPCP, we separately estimated the added effect of MDPCP on top of other model components. We did this by comparing the trend in outcomes for Medicare FFS beneficiaries attributed to MDPCP practices with those attributed to matched comparison practices in Maryland.

In its first four years (2019 to 2022), MDPCP might have reduced hospital stays by about 2.5% for attributed Medicare beneficiaries and increased timely follow-up by similar amounts, but it did not reduce all-cause ED visits and observation stays or unplanned readmissions. Although these effects are modest on a per-beneficiary basis, they are spread over a large population: about half of all Medicare FFS beneficiaries in the state. The program did not generate any measurable cost savings, and therefore could not offset the substantial program costs to CMS. These findings are similar to those from the evaluation of the national Comprehensive Primary Care Plus model, which MDPCP was based on (Swankoski et al. 2022). From interviews and implementation metrics, the most likely driver of MDPCP's observed effects on hospital admissions is that

practices used funding to hire care managers. The care managers worked with high-risk patients to better understand and manage their chronic conditions, which likely helped reduce acute exacerbations, and subsequent hospital stays, for these previously unmanaged chronic conditions.

7.2.5. The likely Medicare spending effects of switching Maryland to the national prospective payment system

According to the original agreement between Maryland and CMS, if the model does not meet cost and quality requirements, CMS has the option to transition Maryland to Medicare's prospective payment system for hospitals. If Maryland switched to the prospective payment system, we estimate long-term total Medicare FFS spending in Maryland would decrease by 13% relative to actual Maryland spending in 2022, amounting to total annual Medicare savings of $1.3 billion per year, with a range of $0.8 to $1.8 billion due to in inherent uncertainty. These savings estimates are driven by reductions in hospital spending because of price reductions for hospital services that would more than offset estimated increases in volume of services. Switching to the prospective payment system would likely have other important implications for access, quality, and equity outcomes, including some likely to be disruptive in the short term. Hospitals would face significant cuts in revenue and, especially for those serving a high share of publicly insured patients, would be at risk of curtailing services or closing altogether. Our results for spending and service use should not be interpreted as a comprehensive picture.

7.3. Limitations of the evaluation

The evaluation has several main limitations. First, because it was out of scope, we did not estimate model effects on some quality or population health measures that were either targeted for improvement by the model (for example, diabetes incidence) or may have declined due to unintended consequences (for example, ED wait times or patient safety). Second, because of data constraints, we were unable to develop a matched comparison group for the Medicaid analyses, so we cannot interpret the observed trends within Maryland as model effects. Third, The MDPCP analysis might modestly understate the true added effects of MDPCP because of the potential for spillover of the intervention to comparison practices that are part of health systems that have other practices participating in MDPCP. In sensitivity analyses, we found modestly larger effects when removing from the comparison group those practices with the highest likelihood of such spillover. Fourth, because Health Equity Advancement Resource and Transformation Payment (HEART) payments to MDPCP practices were implemented in 2022, we were not able to estimate the effects of HEART payments on outcomes. We instead estimated effects for the subpopulation of beneficiaries for whom HEART payments would likely apply mostly in the years before those payments began (2019 to 2022). Finally, because we only recently identified (in exploratory analyses) that the model substantially increased observation use, we have not assessed whether that shift is associated with any changes in quality of care or health outcomes, though we might explore this in the future.

7.4. Conclusion

For decades, Maryland has experimented with hospital payment and delivery reforms that have diverged significantly from the rest of the country. Maryland and CMS took a large step in 2014 when they introduced state accountability for per-capita hospital spending and quality-adjusted global budgets for all eligible hospitals in the state. The model continued to expand in 2019 with the MD TCOC Model, as state accountability expanded beyond the hospital to include total Medicare spending and population health goals. CMS and Maryland also expanded incentives and supports to bring primary care providers and, most recently, specialists into the model.

During the MD TCOC period (2019 to 2022), the accumulated effects of all of the reforms since 2014 have been largely favorable. The model has reduced total Medicare spending, reduced preventable hospital use, and improved a variety of quality measures. Many of these impacts began during the MDAPM period (2014 to 2018) and continued to grow in 2019, the first year of the MD TCOC period. Since 2019, however, the model has sustained but not increased effects for most service and quality measures, while effects on total Medicare spending have gotten smaller. The evaluation will continue to assess the model's effects on spending, service use, and quality through the planned end date of 2026. The evaluation's findings may help inform Maryland's and CMS' decisions about the future of the Maryland Model and reforms in other states.

References

Berenson, Robert A., Divvy K. Upadhyay, Suzanne F. Delbanco, and Roslyn Murray. "Payment Methods and Benefit Designs: How They Work and How They Work Together to Improve Health Care." Urban Institute, 2016. https://www.urban.org/sites/default/files/publication/80301/2000776-Payment-Methods-How-They-Work.pdf.

BOOST. "The 8P Screening Tool Identifying Your Patient's Risk for Adverse Events After Discharge." n.d. https://www.hospitalmedicine.org/globalassets/clinical-topics/clinical-pdf/8ps_riskassess-1.pdf. Accessed September 6, 2023.

Buettgens, M., and A. Green. "What Will Happen To Unprecedented High Medicaid Enrollment After the Public Health Emergency?" Urban Institute, September 2021. https://www.urban.org/sites/default/files/publication/104785/what-will-happen-to-unprecedented-high-medicaid-enrollment-after-the-public-health-emergency_0.pdf.

Centers for Disease Control and Prevention (CDC). "Asthma Emergency Department (ED) Visits 2010-2018." 2021. https://www.cdc.gov/asthma/asthma_stats/asthma-ed-visits_2010-2018.html.

CDC. "Asthma." 2022. https://www.cdc.gov/healthyschools/asthma/index.htm.

CDC. "National Diabetes Prevention Program – About the National DPP." 2023. https://www.cdc.gov/diabetes/prevention/about.htm.

Center for Medicare and Medicaid Innovation. "MDPCP Payment Methodologies: Beneficiary Attribution, Care Management Fee, Performance-Based Incentive Payment, and Comprehensive Primary Care Payment, Model Year 2022." Version 5. Last Modified December 12, 2021.

U.S. Census Bureau. "Urban and Rural." 2023. https://www.census.gov/programs-surveys/geography/guidance/geo-areas/urban-rural.html. Accessed December 4, 2023.

Centers for Medicare & Medicaid Services (CMS). "Maryland Total Cost of Care Model Innovation Center Investment Plan (ICIP). Version 3.0." 2018.

CMS. "Billing and Coding: Acute Care: Inpatient, Observation and Treatment Room Services." Updated 2023a. https://localcoverage.cms.gov/mcd_archive/view/article.aspx?articleInfo=52985:49.

CMS. "National Health Expenditure Data: Health Expenditures by State of Residence, 1991-2020." Updated September 6, 2023b. https://www.cms.gov/data-research/statistics-trends-and-reports/national-health-expenditure-data/state-residence.

CMS. "Medicare Diabetes Prevention Program (MDPP) Billing and Payment Fact Sheet." n.d.. https://innovation.cms.gov/files/fact-sheet/mdpp-billingclaims-fs.pdf. Accessed September 12, 2023.

Chesapeake Regional Information System for our Patients (CRISP). "Episode Care Improvement Program (ECIP) 101." 2019. https://hscrc.maryland.gov/Documents/Care%20Redesign/8%20-%20ECIP%20101%2020190404a.pdf.

CRISP. "Public Health Use Case: Local Health Department Asthma Home Visiting." 2022. https://www.crisphealth.org/wp-content/uploads/2022/03/Public-Health-Use-Case-Asthma-Program-Eligibility.pdf.

Cichowitz, C., G, Loevinsohn, E.Y. Klein, E. Colantuoni, P. Galiatsatos, J. Rennert, and N.A. Irvin. "Racial and Ethnic Disparities in Hospital Observation in Maryland." *American Journal of Emergency Medicine*, vol. 46, 2021, pp. 532–538.

Cressman, Alex M., Ushuma Purohit, Ellen Shadowitz, Edward Etchells, Adina Weinerman, Darren Gerson, Kaveh G. Shojania, Lynfa Stroud, Brian M. Wong, and Steve Shadowitz. "Potentially Avoidable Admissions to General Internal Medicine at an Academic Teaching Hospital: An Observational Study." *Canadian Medical Association Journal*, vol. 11, no. 1, 2023, pp. E201–E207.

Dezman, Z.D.W., B. Stryckman, K.S. Zachrison, R.M. Conrad, D. Marcozzi, L. Pimentel, et al. "Masking for COVID-19 is Associated with Decreased Emergency Department Utilization for Non-COVID Viral Illnesses and Respiratory Conditions in Maryland." *The American Journal of Medicine*, vol. 134, no. 10, 2021, pp. 1247–1251.

Erzouki, F. "No Notice of PHE End Gives States Time to Prepare for Medicaid Unwinding." Center on Budget and Policy Priorities, August 16, 2022. https://www.cbpp.org/blog/no-notice-of-phe-end-gives-states-time-to-prepare-for-medicaid-unwinding.

Figueroa, J., L.G. Burke, K.E. Horneffer, J. Zheng, E.J. Orav, and A.K. Jha. "Avoidable Hospitalizations And Observation Stays: Shifts In Racial Disparities." *Health Affairs*, vol. 39, no. 6, 2020, pp. 1065–1071.

GRASP. "CDC/ATSDR Social Vulnerability Index (SVI)." n.d. https://www.atsdr.cdc.gov/placeandhealth/svi/fact_sheet/SVI-Fact-Sheet-H.pdf. Accessed September 1, 2023.

Haber, Susan, Heather Beil, Walter Adamache, Peter Amico, Christopher Beadles, Olivia Berzin, Maggie Cole-Beebe, et al. "Evaluation of the Maryland All-Payer Model: First Annual Report." Waltham, MA: RTI International, 2016. Available at https://downloads.cms.gov/files/cmmi/marylandallpayer-firstannualrpt.pdf.

Haber, Susan, Heather Beil, Peter Amico, Marisa Morrison, Valentina Akhmerova, Christopher Beadles, Olivia Berzin, et al. "Evaluation of the Maryland All-Payer Model Third Annual Report." Waltham, MA: RTI International, 2018. Available at https://downloads.cms.gov/files/cmmi/md-all-payer-thirdannrpt.pdf.

Haber, Susan, Heather Beil, Marisa Morrison, Leslie Greenwald, Rebecca Perry, Linda Jiang, Sam Masters, et al. "Evaluation of the Maryland All-Payer Model, Volume I: Final Report." Waltham, MA: RTI International, 2019. Available at https://downloads.cms.gov/files/md-allpayer-finalevalrpt.pdf.

Health Services Cost Review Commission (HSCRC). "Shifting of Hospital Services from Regulated to Unregulated Setting." n.d. https://hscrc.maryland.gov/Documents/global-budgets/2023%20Website%20Update%20Files/Deregulation%20Slides%20Volume%20Subgroup%20Meeting%20121318%20FINAL.pdf. Accessed December 8, 2023.

HSCRC. "Statewide Integrated Health Improvement Strategy Proposal." December 2020a. https://hscrc.maryland.gov/Documents/Modernization/SIHIS%20Proposal%20-%20CMMI%20Submission%2012142020.pdf. Accessed September 1, 2023.

HSCRC. "Regional Partnership Catalyst Grant Program Final Funding Recommendation." 2020b. https://hscrc.maryland.gov/Documents/Modernization/Regional%20Partnership%20%20Docs/RP%20Catalyst%20Grant%20Award%20Recommendation%20-%20Nov%202020.pdf.

HSCRC. "Regional Partnership Catalyst Grant Program Request for Proposals - Appendix A." January 2020c. https://hscrc.maryland.gov/Documents/Modernization/Transformation%20Grants/Regional%20Partnership%20Catalyst%20Grant%20Program%20RFP%20FINAL.pdf.

HSCRC. "Revised Final Recommendation for the Update Factors for Rate Year 2022." 2021a. https://hscrc.maryland.gov/Documents/Hospitals/gbr-tpr-update/FY-2022/RY22RevisedFinalUFRecommendation_FINAL.pdf.

HSCRC. "Final Recommendation for the Readmission Reduction Incentive Program for Rate Year 2023." 2021b. https://hscrc.maryland.gov/Documents/Quality_Documents/RRIP/RY2023/RY%202023%20Final%20RRIP.docx.pdf.

HSCRC. "Medicare Performance Adjustment: Final Recommendation." 2021c. https://hscrc.maryland.gov/Documents/FINAL%20Recommendation%20MPA%20CY%202022%20.docx.pdf.

HSCRC. "The Episode Quality Improvement Program: Value-Based Medicare Incentive Payment Opportunity for Maryland Physicians." 2021d. https://hscrc.maryland.gov/Documents/EQIP/EQIP_Cardio_5_27_21.pdf.

HSCRC. "Draft Revenue for Reform." 2022. https://hscrc.maryland.gov/Documents/HSCRC%206-21-22%20Public%20Session%20-%20Draft%20Revenue%20for%20Reform%20Recommendation%20(HSCRC-MHA).pdf#:~:text=The%20draft%20Revenue%204%20Reform%20policy%20provides%20incentives,the%20Commission%2C%20CMS%2C%20and%20the%20public%20at%20large.

HSCRC. "Final Recommendation for the Update Factors for Rate Year 2023." 2023a. https://hscrc.maryland.gov/Documents/Strong%20als%20Folder/AUUR%20-%20Unit%20Rates%20and%20GBR/FY%202023/RY23FinalUFRecommendation%20_approved.pdf.

HSCRC. "Statewide Integrated Health Improvement Strategy Annual Report." January 2023b. https://hscrc.maryland.gov/Documents/Modernization/Statewide%20Integrated%20Health%20Improvement%20Strategy/SIHIS%202022%20Annual%20Report%20FINAL%20w%20appendices.pdf. Accessed September 7, 2023.

Jain, A., J. Levy, D. Polsky, and K.E. Anderson. "Medicare Advantage And The Maryland All-Payer Model." Health Affairs Forefront, 2022.

Johns Hopkins Medicine. "Diabetes Prevention Program (DPP)." n.d. https://www.hopkinsmedicine.org/population-health/dpep/diabetes-prevention-program.

Joint Commission. "New Requirements to Reduce Health Care Disparities." Requirement, Rationale, Reference (R^3) Report, issue 36, 2022. https://www.jointcommission.org/standards/r3-report/r3-report-issue-36-new-requirements-to-reduce-health-care-disparities/.

KFF. Medicare Advantage in 2023: Enrollment Update and Key Trends. August 2023a. https://www.kff.org/medicare/issue-brief/medicare-advantage-in-2023-enrollment-update-and-key-trends/

Kaiser Family Foundation (KFF). "10 Things to Know About the Unwinding of the Medicaid Continuous Enrollment Provision." June 9, 2023b. https://www.kff.org/medicaid/issue-brief/10-things-to-know-about-the-unwinding-of-the-medicaid-continuous-enrollment-provision/.

Kangovi, Shreya, Susannah G. Cafardi, Robyn A. Smith, Raina Kulkarni, and David Grande. "Patient Financial Responsibility for Observation Care." *Journal of Hospital Medicine,* vol. 10, no. 11, 2015, pp. 718–723.

Kind, A. J., Jencks, S., Brock, J., Yu, M., Bartels, C., Ehlenbach, W., Greenberg, C., & Smith, M. (2014). Neighborhood socioeconomic disadvantage and 30-day rehospitalization: a retrospective cohort study. *Annals of internal medicine*, *161*(11), 765–774. https://doi.org/10.7326/M13-2946

NYU Wagner. "Faculty & Research." n.d. https://wagner.nyu.edu/faculty/billings/nyued-background. Accessed January 24, 2023.

Machta, Rachel, Greg Peterson, Jason Rotter, Kate Stewart, Shannon Heitkamp, Isabel Platt, Danielle Whicher, Keri Calkins, Keith Kranker, Linda Barterian, and Nancy McCall. "Independent Evaluation of the Maryland Total Cost of Care Model: Implementation Report." Mathematica, 2021.

Maryland Primary Care Program. "Advancing Primary Care Guide." 2021. https://health.maryland.gov/mdpcp/Documents/Advancing_Primary_Care_Guide.pdf.

Medicare.gov. "Medicare Diabetes Prevention Program." n.d. https://www.medicare.gov/coverage/medicare-diabetes-prevention-program.

Medicare Payment Advisory Commission (MedPAC). "Medicare Payment Policy." 2023. https://www.medpac.gov/wp-content/uploads/2023/03/Mar23_MedPAC_Report_To_Congress_SEC.pdf.

Murray, R., and R. Berenson. "Hospital Rate Setting Revisited." Urban Institute, 2015. https://www.urban.org/sites/default/files/publication/73841/2000516-Hospital-Rate-Setting-Revisited.pdf.

Patel, Krishna K., Nirav Vakharia, James Pile, Erik Howell, and Michael B. Rothberg. "Preventable Admissions on a General Medicine Service: Prevalence, Causes and Comparison with AHRQ Prevention Quality Indicators—A Cross-Sectional Analysis." *Journal of General Internal Medicine,* vol. 31, no. 6, 2016, pp. 597–601.

Peter G. Peterson Foundation. "How Does Government Healthcare Spending Differ from Private Insurance?" 2023. https://www.pgpf.org/blog/2023/02/how-does-government-healthcare-spending-differ-from-private-insurance.

Pines, Jesse M., Sonal Vats, Mark S. Zocchi, and Bernard Black. Maryland's Experiment with Capitated Payments For Rural Hospitals: Large Reductions In Hospital-Based Care." *Health Affairs,* vol. 38, no. 4, 2019.

Roberts, Eric T., J. Michael McWilliams, Laura A. Hatfield, Sule Gerovich, Michael E. Chernew, Lauren G. Gilstrap, and Ateev Mehrotra. "Changes in Health Care Use Associated with the Introduction of Hospital Global Budgets in Maryland." *JAMA Internal Medicine,* vol. 178, no. 2, 2018, pp. 260–268. https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2668632.

Sabbatini Amber K., Karen E. Joynt-Maddox, Joshua M. Liao. "Accounting for the Growth of Observation Stays in the Assessment of Medicare's Hospital Readmissions Reduction Program". *JAMA Network Open*, vol. 5, no. 11, 2022.

Sapra, Katherine J., Katie Wunderlich, and Howard Haft. "Maryland Total Cost of Care Model: Transforming Health and Health Care." *JAMA,* vol. 321, no. 10, 2019, pp. 939–940. https://jamanetwork.com/journals/jama/fullarticle/2726614.

Sharfstein, Joshua M., Elizabeth A. Stuart, and Joseph Antos. "Maryland's All-Payer Health Reform—A Promising Work in Progress." *JAMA Internal Medicine,* vol. 178, no. 2, 2018, pp. 269–270. https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2668628.

Sheehy, Ann M., Ben K. Graf, Sreedevi Gangireddy, Roger Formisano, and Elizabeth A. Jacobs. "'Observation Status' for Hospitalized Patients: Implications of a Proposed Medicare Rules Change." *JAMA Internal Medicine*, vol. 173, no. 21, 2013, pp. 2004–2006.

Swankoski, Kaylyn, Ann O'Malley, Ha Tu, Dana Petersen, Pragya Singh, Kristin Geonnotti, Rosalind Keith, et al. "Independent Evaluation of Comprehensive Primary Care Plus: Fourth Annual Report." Mathematica, 2022. https://www.cms.gov/priorities/innovation/data-and-reports/2022/cpc-plus-fourth-annual-eval-report.

Telesford, I., S. Rakshit, M. McGough, E. Wager, and K. Amin. "How Has U.S. Spending on Healthcare Changed over Time." February 7, 2023. https://www.healthsystemtracker.org/chart-collection/u-s-spending-healthcare-changed-time/#Total%20national%20health%20expenditures,%20US%20$%20Billions,%201970-2021.

Trinh, Tina, Amira Elfergani, and Maralyssa Bann. "Qualitative Analysis of Disposition Decision Making for Patients Referred for Admission from the Emergency Department Without Definite Medical Acuity." *British Medical Journal*, July 14, 2021.

Wikle, S., and J. Wagner. "Unwinding the Medicaid Continuous Coverage Requirement: Frequently Asked Questions." Center on Budget and Policy Priorities, March 9, 2022. https://www.cbpp.org/research/health/unwinding-the-medicaid-continuous-coverage-requirement.