The Hilltop Institute
UMBC

report

Maryland Department of Health Master Agreement Annual Report of Activities and Accomplishments FY 2019

December 2019

Table of Contents

A Nationally Recognized Partnership 1
- The Hilltop Institute at UMBC 1
- History 2
- Leveraging Our Work 3
- National Recognition 4
- Annual Report 5

HealthChoice Program Support and Evaluation 6
- Dental Services 37

Medicaid Rate Setting 14

Analytics to Support Health Reform 14
- Medicaid Expansion 17
- Maryland All-Payer Model 17
- Health Homes 19
- Community First Choice 20
- Home and Community-Based Services 21
- Other Support 22

Financial Analysis 25

Other Analyses and Technical Support 27
- Coverage and Health Services Utilization 27
- Provider Participation 28
- Long-Term Services and Supports 28
- Behavioral Health Services 32
- Other Data Analytics and Support 37
- Data Analytics for Federal Grant Application 39
- Data Requests from External Researchers and Agencies 40

Data Management and Web-Accessible Databases 43
- Data Sets 43
- Databases Developed and Maintained for the Department 45

A Nationally Recognized Partnership

The Hilltop Institute at UMBC

The Hilltop Institute at the University of Maryland, Baltimore County (UMBC), currently in its 25th year of service to the state of Maryland, is dedicated to advancing the health and wellbeing of people and communities. Nationally recognized for its expertise in Medicaid and state health policy, Hilltop is committed to addressing complex issues through informed, objective, and innovative research and analysis. With an extensive data repository and a staff of almost 50 full-time professionals—policy and financial analysts, economists, attorneys, actuaries, public health professionals, and SAS programmers—Hilltop is uniquely positioned to conduct cutting-edge data analysis, policy research, and program development to address salient issues confronting publicly financed health care systems. As state and federal governments continue to consider reforms to Medicaid, the insurance marketplaces, and the health care financing and delivery system, Hilltop's deep understanding of state health policy and expertise in data analytics is critical to Maryland's efforts to continue to ensure access to quality, affordable health care for all Marylanders.

Since 1994, Hilltop has maintained a collaborative and highly productive partnership with the Maryland Department of Health (the Department) and—more specifically—the Maryland Medicaid Administration. This relationship is governed through an interagency agreement between UMBC (on behalf of Hilltop) and the Department's Office of Innovation, Research, and Development. The Department has designated Hilltop as a business associate pursuant to the Health Insurance Portability and Accountability Act (HIPAA) Privacy Rule. In this capacity, Hilltop maintains an extensive data repository to support program development, operations, and evaluation, research, policy analysis, and rate setting. The data repository includes Maryland Medicaid data dating back to 1991, as well as hospital discharge data and federal data sets required to support Hilltop's analyses (e.g., nursing home assessment data and Medicare data for Marylanders. Hilltop developed and supports a web-based decision support system (DSS) for the exclusive use of the Department that provides real-time data on Medicaid eligibility, utilization, and expenditures, as well as a public site that offers Medicaid eligibility information.

Each year, Hilltop develops risk-adjusted capitation payments for HealthChoice, Maryland's Medicaid managed care program. In fiscal year (FY) 2019, HealthChoice had nine participating managed care organizations (MCOs), served about 1.2 million beneficiaries, and paid $5.8 billion in capitated payments to MCOs. Hilltop conducts the annual evaluation of HealthChoice required by the Centers for Medicare & Medicaid Services (CMS), as well as a multitude of ad hoc analyses each year to support further development and administration of the program. In FY 2017, CMS renewed Maryland's §1115 waiver for HealthChoice, and Hilltop is providing support to the Department in

implementing and evaluating new benefits and initiatives. Such benefits and initiatives include the Institutions for Mental Diseases (IMD) exclusion waiver, which allows Medicaid reimbursement for residential treatment for individuals aged 21 to 64 with substance use disorder (SUD); integrated physical and behavioral health services; the Evidence-Based Home Visiting Services (HVS) pilot program; and the Assistance in Community Integration Services (ACIS) pilot program. Hilltop analyzes provider fees to support state deliberations on payment rates and compliance with federal rules. Hilltop's analyses have been instrumental in the implementation and evaluation of Affordable Care Act (ACA) initiatives such as the Medicaid expansion, the Money Follows the Person (MFP) Rebalancing Demonstration, the State Balancing Incentives Program, Community First Choice (CFC), and Medicaid health homes for individuals with serious and persistent mental illness, serious emotional disturbance, and opioid use disorder (OUD). Hilltop provided the Department with analytic support to monitor the effects of the Maryland All-Payer Model (approved by CMS in 2014) on the Medicaid program and currently conducts analysis on the implementation of the Total Cost of Care Model approved in 2019. In all areas of collaboration, Hilltop assists the Department in meeting its goal of ensuring that all Marylanders have access to affordable and appropriate health care.

Hilltop provides data analytics, technical support, and policy analysis to other divisions and entities of the Department (e.g., the Developmental Disabilities Administration [DDA], Behavioral Health Administration [BHA], Public Health Administration [PHA], Maryland Health Care Commission [MHCC], Health Services Cost Review Commission [HSCRC], and Community Health Resources Commission [CHRC]) and to other state agencies (e.g., the Maryland Health Benefit Exchange [MHBE] and the Maryland Department of Human Services. Through these relationships, Hilltop helps facilitate improved cross-agency coordination on data needs, analytics, and policy development. While Hilltop also conducts work for other states, the federal government, nonprofit agencies, and foundations, its relationship with the Department remains its primary focus.

History

UMBC established The Hilltop Institute in 1994 as the Center for Health Program Development and Management in partnership with the Department. Together, Hilltop and the Department developed Maryland's High-Risk Patient Management Initiative, which aimed to provide access to health care services for individuals who were both medically fragile and financially indigent and to be managed in such a way that the state's scarce resources would be utilized in the most cost-effective manner. This program later became the Rare and Expensive Case Management (REM) program, and Hilltop managed it until 2004, when this task was assumed by the Department. Hilltop continues to provide data analysis and monitoring for the REM program.

As Hilltop's research and analytic expertise grew, the Department began requesting analyses and assistance in other areas as Maryland expanded its Medicaid program. Hilltop collaborated with the Department in the development of HealthChoice, Maryland's Medicaid managed care program launched in 1997, as well as the HealthChoice §1115 Waiver applications. Today, Hilltop continues to conduct research and policy analysis for HealthChoice and develop capitated payment rates for health plans participating in the program. Over the years, Hilltop's role has evolved as the priorities and needs of the Department have changed, but its focus on data-driven research and analytics to inform program and policy development, implementation, and evaluation remains constant.

Leveraging Our Work

Leveraging its knowledge of state health policy, access to Maryland health care data, and expertise in data analytics, Hilltop often collaborates with university faculty and other organizations to conduct research that benefits the Maryland Medicaid program. With funding from the Robert Wood Johnson Foundation (RWJF), Hilltop worked with Benefits Data Trust (BDT) and researchers from the Johns Hopkins University School of Nursing to first examine the extent to which dual-eligible beneficiaries in Maryland were enrolled in the Supplemental Nutritional Assistance Program (SNAP) and Maryland Energy Assistance Program (MEAP) and then model the potential effect of program participation on nursing home admissions.[1] In 2015 and 2016, Hilltop partnered with MHCC to analyze commercial claims in the Medical Care Data Base (MCDB)—Maryland's all-payer claims database—to compare spending patterns across five regions of the country as part of *Getting to Affordability* sponsored by RWJF and the Network for Regional Healthcare Improvement (NRHI).[2] In 2017, Hilltop—building on its experience in working with the federal nursing home Minimum Data Set (MDS) for the Department—secured a competitively bid contract from MHCC to conduct analytics and produce reports from the MDS and MHCC's annual nursing home survey. Under Maryland's 2015 State Innovation Model (SIM) design award from CMS, Hilltop collaborated with the Department to develop a conceptual model for an accountable care organization (ACO) for Medicare-Medicaid ("dual-eligible") beneficiaries in the state, estimating baseline costs and modeling shared savings. For the MHBE, Hilltop has assisted with the design of a reinsurance program for the Maryland marketplace. Hilltop assessed the extent to which four projects funded under the CHRC's grant program are affecting health care utilization and costs for Medicaid participants. In FY 2018, Hilltop partnered with the University of Maryland, College Park, and the University of Delaware to conduct a mixed-methods

[1] Szanton, S. L., et al. (2017). Food assistance is associated with decreased nursing home admissions for Maryland's dually eligible older adults. *BMC Geriatrics, 17*(1), 162, Retrieved from https://bmcgeriatr.biomedcentral.com/articles/10.1186/s12877-017-0553-x; and Samuel, L. J., et al. (2017). Does the Supplemental Nutrition Assistance Program affect hospital utilization among older adults? The case of Maryland. *Population Health Management.* Retrieved from http://www.bdtrust.org/wp-content/uploads/2017/07/Pop-Health-Mgmt_Hospitalizations_linked.pdf

[2] http://www.nrhi.org/uploads/g2a-benchmark-report-final-web-1.pdf

evaluation of the effectiveness of the Delaware Contraceptive Access Now (Del-CAN) program. Virginia Commonwealth University and Hilltop recently received a grant from RWJF to examine Virginia's and Maryland's experience with §1115 IMD waivers recently approved by CMS that permit federal financial participation (FMAP) for residential treatment for Medicaid participants aged 21 to 64 with SUD. From 2015 to 2017, Hilltop collaborated with the Johns Hopkins University School of Nursing to pilot test Community Aging in Place—Advancing Better Living for Elders (CAPABLE), a program that the Department is now considering implementing on a broader scale. For the Maryland Primary Care Program (MDPCP)—a component of Maryland's Total Cost of Care Model—Hilltop developed a model in 2019 to predict the risk of avoidable hospitalizations for individuals in Maryland's Medicare population for use by care coordinators in primary care practices. In the coming year, Hilltop will replicate for Maryland Medicaid a 2018 study for the Center for Mississippi Health Policy that estimated the costs to Mississippi Medicaid attributable to tobacco use.

National Recognition

Hilltop's successful state/university partnership with the Department remains the mainstay of Hilltop's work. This partnership continues to garner national attention. A 2014 article in the *Journal of Health Politics, Policy, and Law* titled *Supporting the Needs of State Health Policy Makers through University Partnerships* prominently featured Hilltop and its partnership with the Department.[3] In that same year, the Department and Hilltop joined other established and developing state/university partnerships as members of the State-University Partnership Learning Network (SUPLN) coordinated by AcademyHealth. The network was formed to support evidence-based state health policy and practice through collaborations by state governments and state university research centers. Currently, Medicaid agencies in 23 states have active partnerships with 26 public universities. Hilltop's executive director chairs the SUPLN steering committee. In 2016 and 2018, AcademyHealth received funding from the Patient-Centered Outcomes Research Institute (PCORI) to support SUPLN convenings and research and dissemination activities.

Researchers from Hilltop and eight other SUPLN partnerships—Kentucky, Michigan, North Carolina, Ohio, Pennsylvania, Virginia, West Virginia, and Wisconsin—have developed the Medicaid Outcomes Distributed Research Network (MODRN). The distributed research network uses a common data model and standardized analytic code for conduct of local analyses of Medicaid administrative data. Results are then aggregated to present cross-state comparisons of Medicaid initiatives to advance policymaking. MODRN facilitates efficient, data-drive analyses without the need to share sensitive person-level data across states. In 2019, the National Institute on Drug Abuse (NIDA) awarded funding to the MODRN team to harness the power of MODRN to assess OUD treatment quality and outcomes,

[3] See https://read.dukeupress.edu/jhppl/article/39/3/667/13682/Supporting-the-Needs-of-State-Health-Policy-Makers.

with the goal of informing policy decisions on coverage and payment for evidence-based OUD treatments in Medicaid. The team will report on 15 standardized measures of OUD treatment performance. Then they will link Medicaid claims to vital statistics to examine the association between the quality of OUD treatment and fatal and non-fatal drug overdoses. Finally, the researchers will examine associations between Medicaid coverage policies, OUD treatment quality, and overdose outcomes.

Annual Report

In FY 2014, The Hilltop Institute at UMBC entered into a five-year Master Agreement with the Maryland Department of Health that extended through FY 2019. This annual report presents activities and accomplishments for FY 2019 (July 1, 2018, through June 30, 2019), the final year of this Master Agreement.

HealthChoice Program Support and Evaluation

In FY 2019, Hilltop continued to play a key role in supporting HealthChoice, Maryland's Medicaid managed care program, by conducting an annual evaluation of the program, monitoring the performance of HealthChoice MCOs, and conducting special policy studies and analyses.

HealthChoice §1115 Waiver Evaluation: As in previous years, Hilltop partnered with the Department to monitor and report on the performance of the HealthChoice program. During this reporting period, Hilltop submitted its evaluation of the HealthChoice program for calendar year (CY) 2013 through CY 2017. This *report* provided a brief overview of the program and recent updates summarizing changes to the overall HealthChoice program, and then addressed the following five demonstration goals:

- Improve coverage and access to care for the Medicaid population, including provider network adequacy
- Improve quality of health services delivered, including value-based purchasing
- Provide a primary medical home and appropriateness of care
- Emphasize health promotion and disease prevention, including the use of dental, somatic, and behavioral health services
- Expand coverage through demonstration programs such as Residential Treatment for Individuals with SUD and the Family Planning program

The report covered access to and the quality of care for special populations such as children in foster care, pregnant women, persons with HIV/AIDS, and racial/ethnic minorities. In addition, the report presented a section on the ACA Medicaid expansion population and its demographics, service utilization, and prevalence of behavioral health conditions, mental health disorders (MHDs), and SUD diagnoses during CY 2014 through CY 2017, the first four years of the expansion.

For the evaluation report, Hilltop continued to perform in-depth analyses on such topics as service utilization measures (e.g., ambulatory care and outpatient emergency department [ED] use, inpatient admissions, and ACA utilization) among HealthChoice participants. Hilltop also conducted an analysis of health outcomes of participants with diabetes with five or more outpatient ED visits who received standard diabetes follow-up care services compared to those who did not have follow-up care during CY 2017. In addition, Hilltop included a new section in the evaluation on enrollment and MCO selection through the Maryland Health Connection.

Rare and Expensive Case Management (REM): The REM program serves individuals with multiple and severe health care needs. In FY 2019, Hilltop continued to provide analytical support

to the REM program. Hilltop prepared quarterly analytic reports for REM case managers and providers and included other analyses of the REM population in its evaluation of the HealthChoice program. Hilltop also produced a chart book that described program participant demographics, service utilization, and program cost trends for CY 2012 to CY 2016. Finally, Hilltop provided a yearly update to the baseline evaluation covering CY 2013 through CY 2016 that contained measures including immunization, ambulatory care, and dental visits among the REM population.

Early Periodic Screening, Diagnosis, and Treatment (EPSDT): Hilltop reviewed and commented on the Department's annual EPSDT report to CMS (CMS-416). The information is used by CMS to assess the effectiveness of state EPSDT programs in terms of the number of individuals under the age of 21 (by age group and basis of Medicaid eligibility) who are provided child health screening services, referred for appropriate treatment, and receiving dental services. Child health screening services are defined for purposes of reporting on this form as initial or periodic screens required to be provided according to a state's screening periodicity schedule.

Childhood Lead Reporting: Maryland law requires all lead tests performed on children from birth through 18 years to be reported to the Maryland Department of the Environment (MDE) Childhood Lead Registry (CLR). Using a program it developed to implement an enhanced CLR/Medicaid data-matching process, Hilltop identifies Medicaid participants in the CLR data, identifies the corresponding MCOs for these children, reports the blood lead testing and elevated blood lead level rates, and develops monthly reports and an annual report. Hilltop submitted monthly reports and year-to-date reports for children aged 0 to 6 years to the Department. Hilltop also submitted an annual report—including a county-based analysis of lead testing results for HealthChoice children aged 12 to 23 months and 24 to 35 months—to MDE on behalf of the Department. The results of the lead tests are then reported to the MCOs for follow-up on children with elevated blood lead levels. In addition, Hilltop developed a procedural summary of the monthly match process between the CLR and Medicaid data for the MCOs, and assisted the Department with drafting policy guidance for the MCOs for reconciling data concerns with the CLR. New this year, Hilltop calculated the number of unique providers who billed for onsite environmental lead inspection for enrolled children in all jurisdictions except for Baltimore City for CY 2014 through CY 2018. In addition, the Department executed a new DUA with MDE to provide MDE with finder files of lead tests identified in the MMIS. To support this effort, Hilltop created and submitted a finder file of all lead tests for children with a date of service between January 1 and March 31, 2018, and submitted the file to the Department.

CHIP Health Services Initiative Lead State Plan Amendment: In June 2017, CMS approved Maryland's application for a Children's Health Insurance Program (CHIP) Health Services Initiative (HSI) state plan amendment (SPA) to implement two initiatives aimed at removing asthma and

lead triggers within the home. The Department is developing these two initiatives in partnership with the Department of Housing and Community Development. Program 1 conducts lead hazard home assessments to identify lead hazards in the homes of low income children with elevated blood lead levels and abates any identified hazards in the home. Program 2 provides home assessments that identify asthma triggers and conditions that could contribute to lead poisoning in the homes of low income children with asthma and/or elevated blood lead levels and conducts educational home visits to help families address medication adherence, nutrition, and safe cleaning techniques. Hilltop's role for the project is to develop finder files to target at-risk households. Hilltop conducted an analysis of children aged 0 through 18 years residing in the following 15 counties—Allegany, Anne Arundel, Calvert, Caroline, Carroll, Cecil, Garrett, Howard, Kent, Montgomery, Queen Anne's, Somerset, Talbot, Washington, and Worchester—who received a lead test as reported to the CLR (Program 1) from March 2017 to March 2018. Hilltop then conducted an analysis of children enrolled in Medicaid who met the following criteria: 1) aged 0 through 18 years, 2) residing in Baltimore City, Harford County, Baltimore County, Frederick County, Charles County, Wicomico County, St. Mary's County, Dorchester County, or Prince George's County, and 3) either received a lead test as reported to the CLR or were identified as having an asthma claim or encounter (Program 2) in the above nine counties from March 2017 to March 2018. Hilltop then completed an analysis of race and ethnicity by county and later identified the number of children who met the CHIP HSI SPA asthma criteria statewide in FY 2018. Hilltop also developed finder files for Programs 1 and 2 covering the time periods of October 2017 through October 2018 and December 2017 through December 2018. Hilltop re-classified children into priority levels based on age and number of inpatient admissions and ED visits. Hilltop then de-duplicated them for the nine counties, delineating by children who only had lead poisoning, children who only had asthma, and children who had both lead poisoning and asthma. Hilltop also performed an analysis of the number of children in CYs 2016 and 2017 aged 0 through 6 years with blood lead levels between 5 and 9, and 10+ ug/dl.

Value-Based Purchasing: The goal of Maryland's value-based purchasing (VBP) strategy is to improve quality of care and access by tying a portion of each MCO's capitation to its performance on a number of prescribed performance indicators or measures. As part of the HealthChoice evaluation, Hilltop monitors and reports on those measures. In FY 2019, Hilltop provided a summary of the technical specifications for the CY 2018 lead screening and ambulatory care VBP measures, prepared the HealthChoice VBP targets for CY 2019, and responded to a request from Aetna regarding the ambulatory care measure. Hilltop completed the final ambulatory care VBP measure for HealthChoice participants with disabilities for CY 2017 and compared the final results for CYs 2016 and 2017. Hilltop also completed the preliminary ambulatory care measure for CY 2018 and compared the final CY 2017 results with the preliminary CY 2018 results. To analyze the

impact of retroactive MCO enrollment changes, Hilltop compared the ambulatory care VBP measure using December 2017 enrollment to the rates of the same measure in July 2018. In addition, Hilltop completed the final lead VBP measure for CY 2017 and the preliminary lead VBP measure for CY 2018, which calculated the percentage of children aged 12 to 23 months who received a lead test during the calendar year or the year prior. Hilltop then provided each MCO with a pre-preliminary analysis of its lead testing and ambulatory care visit VBP measures for CY 2018, followed by preliminary analyses of the same.

Managing for Results: In FY 2019, Hilltop prepared the CY 2017 lead managing-for-results (MFR) measure, which included blood lead testing rates and elevated blood lead levels for children aged 12 to 23 months and 24 to 35 months—delineated by county and high-risk ZIP code in Baltimore City—who were enrolled in a HealthChoice MCO for 90 or more continuous days during CY 2017. Hilltop also prepared the asthma avoidable admission measures for CY 2017 and provided estimates for CY 2018 to CY 2020 for the Cigarette Restitution Fund. In addition, Hilltop prepared the racial disparities MFR measures, calculating average ambulatory care visits delineated by race/ethnicity for CY 2017, as well as estimates for CY 2018 through CY 2020. Hilltop analyzed the birth weight of newborns in the HealthChoice program and provided the percentages of very-low-birth-weight newborns for CY 2017 and estimates for CYs 2018 to 2020, and subsequently updated the results. Finally, to assist the Department in responding to a request from the Maryland Department of Disabilities, Hilltop calculated the number of individuals receiving state-funded services in community alternatives versus nursing facilities (NFs), delineated by service, for FY 2017 and projected numbers for FYs 2018 through 2020.

Encounter Data Reporting and Validation: Through monthly, quarterly, and annual reports to the Department and the MCOs, Hilltop verified the completeness, accuracy, and reliability of encounter data and regularly reviewed the data to ensure validity. Encounter data were used to evaluate access to care and network adequacy, as well as to develop payment rates for HealthChoice. Monthly reports consisted of date of service analyses and MCO data submission projections. Quarterly reports classified MCO physician, outpatient, and dental encounter data by service category (physician, lab, x-ray, etc.); calculated a ratio of services per participant; validated inpatient encounters; and identified the use or overuse of default provider numbers for physician services.

Starting in FY 2019, Hilltop restructured the annual report to meet CMS encounter data validation reporting requirements documented in External Quality Review (EQR) Protocol 4, Activity 3. The new annual report for CY 2018 evaluates the Department's encounter data processing and reviews the encounter data. Documentation of the state's encounter data processing includes an overview of the electronic data interchange (EDI) and the Medicaid Management Information System

(MMIS2), as well as the validation process to ensure that encounters are accepted by the system. The review of accepted encounters includes analysis of the volume of encounters submitted over time, utilization rates, completeness of identified fields, data accuracy, and timeliness of submission to the Department. The report incorporates Tableau® business intelligence platform visualization to meet the CMS requirement for visual analytics and is structured to incorporate data from Hilltop's new Master Analytic Database. In addition, Hilltop provided Qlarant (the organization contracted by the Department to conduct MCO quality reviews) with eight statistically significant random samples of HealthChoice MCO encounter records from the hospital inpatient, outpatient, and physician services that occurred in CY 2017 for each Medicaid MCO.

CAHPS® Health Plan Survey: Hilltop prepared adult and child survey sample frames based on National Committee for Quality Assurance's (NCQA's) 2019 specifications of HealthChoice-eligible recipients for the Consumer Assessment of Healthcare Providers and Systems (CAHPS®) health plan survey. MetaStar, a vendor contracted by the Department to review and certify that Hilltop's SAS code meets NCQA requirements, audited source code and final sample frames. After receiving MetaStar approval, Hilltop transmitted final adult and child sample frames to the Department.

Shadow Pricing: Beginning January 1, 2018, the HealthChoice MCOs are required to report the actual payment amounts for services in the MMIS when submitting their encounter data to the Department. While the completeness of these submissions is improving over time, the data cannot yet be reliably used in cost analyses. To estimate the costs of services for the Department (e.g., reporting MCO data to MHCC for the MCDB), Hilltop continued to estimate or "shadow price" MCO payments to providers in FY 2018. This included developing different methodologies for different types of services. For professional services, shadow pricing includes 1) applying the fee-for-service (FFS) schedule to each procedure code, accounting for modifiers, units of service, and changes to fees over time, and 2) applying the average FFS payment to procedure codes that are not listed on the fee schedule. For regulated institutional services, because all-payer rate regulation limits the amount hospitals can bill, Medicaid MCOs must pay the amount charged by the hospital minus a discount, which was 6 percent until June 30, 2019.

Primary Care Provider Utilization: In FY 2019, Hilltop continued to work with the Department to study primary care provider (PCP) utilization. HealthChoice MCOs were asked to provide the assigned PCP and the PCP's National Provider Identifier (NPI) for each of their members. MCOs were also asked to identify all of the individual PCPs within a group practice and to provide the individual provider's NPI, name, group practice NPI, and group practice name. Hilltop analyzed the data and calculated the percentage of HealthChoice participants with a visit with any PCP in their MCO's network in CY 2017. Hilltop also identified the PCP provider types that participants visited outside of their assigned PCPs. Due to Priority Partners' network consolidation, Hilltop analyzed to

whom Priority Partners' participants were transferred, by provider. The analysis included the number of HealthChoice participants assigned to a federally qualified health center (FQHC), the number of participants being reassigned to an FQHC, and the number of participants assigned to a non-FQHC provider. Finally, Hilltop conducted an analysis comparing the providers submitted as PCPs from the MCOs to providers with active contracts in MMIS for CY 2017.

State Health Improvement Process: At the request of the Department, Hilltop performed an analysis for the *State Health Improvement Process* (SHIP) on the utilization of dental, lead screening, ambulatory care, and well-visit services in CY 2017 by individuals in Medicaid. Specifically, Hilltop calculated—by county and race/ethnicity—the number and percentage of 1) Medicaid participants aged 0 to 20 years (with any period of enrollment as well as those with at least 320 days of enrollment in the calendar year) who had a dental visit; 2) pregnant women aged 21 years or older in the Medicaid program (with any period of enrollment and at least 90 days of enrollment in the calendar year) who had a dental visit; and 3) children aged 12 to 35 months in the Medicaid program (with at least 90 days of enrollment in the calendar year) who had a lead screening test. Hilltop also calculated—by age group, county, and race/ethnicity—the number and percentage of 1) Medicaid participants aged 0 to 64 years (with any period of enrollment and at least 320 days of enrollment in the calendar year) who had an ambulatory care visit; and 2) Medicaid participants aged 13 to 20 years (with any period of enrollment and at least 320 days of enrollment in the calendar year) who had a well-care visit.

Community Health Pilots: As part of the HealthChoice §1115 waiver renewal, the Department is offering local governments the opportunity to request matching federal funds for two pilot programs. Assistance in Community Integration Services (ACIS) is intended for high-risk, high-utilizing Medicaid participants who are at risk of homelessness when transitioning to the community from an institution, or are at high risk of institutional placement. Evidence-Based Home Visiting Services (HVS) commenced for high-risk pregnant and post-partum women, and their children up to age two. The first round of pilots were awarded in November 2017. Both pilot programs include performance measures and an evaluation component. In FY 2019, Hilltop continued to provide consultation and support for program development and continued the evaluation process for both programs.

> **Assistance in Community Integration Services:** Hilltop updated the data collection template to reflect changes requested by the Department and lead entities, including adding Prince George's County Health Department and its participating entities and changing the Excel template to two sheets instead of one. Hilltop updated the data collection template for Montgomery County to include additional participating entities. Hilltop developed SAS code to import the data collected by each participating entity sent

to Hilltop quarterly and to produce quarterly billing reports for each participating entity. Specifically, Hilltop sent FY 2019 quarterly billing reports to the Department for Baltimore City, Montgomery County, Prince George's County, and Cecil County.

Hilltop continued to provide technical assistance to the Department and the lead and participating entities through its participation in monthly calls and the Department's consortium, and followed up with specific lead entities as needed regarding data issues.

Hilltop conducted an analysis on the data it received from lead entities for CY 2018, which focused on summary measures including counts of participants by lead entity, the living situation at the time of enrollment in ACIS and at each service event, and the number of service events delivered. Hilltop sent two versions of the analysis to the Department: a public version and one that contained small cell sizes for internal use only. Hilltop delivered the year one evaluation of ACIS to the Department, which included measures (ambulatory visits, inpatient stays, ED visits, unnecessary ED visits, and nursing home stays) for ACIS participants in the three months prior to and three months after ACIS enrollment.

Evidence-Based Home Visiting Services: Hilltop worked with the Department to develop evaluation measures for the annual evaluation of the HVS pilot program and produced the annual report for the Department. The report provides analyses of service utilization among Medicaid participants enrolled in HVS in CY 2018. Hilltop also submitted quarterly billing reports and quarterly visit reports for the counties participating in HVS and provided instruction for implementing a method for recording visits completed by families with multiple births.

Family Planning: For required reporting to CMS, Hilltop conducted an analysis of participants enrolled in the Family Planning (FP) program, which provides family planning-related services to women with income at or below 250 percent of the federal poverty level (FPL) who are not otherwise eligible for Medicaid, CHIP, or Medicare. Hilltop fulfilled a request to provide an estimate of the number of women who were pregnant in CY 2017 and then had at least one month of coverage in FP (called P10) during CY 2018. In addition, Hilltop calculated the number of women who were pregnant in CY 2017 and then enrolled in P10 during CY 2018.

Pregnant Women: To assist the Department with a request for the Women, Infants, and Children (WIC) program, Hilltop calculated the number of women enrolled in Medicaid in FY 2018who were pregnant, as well as the number of infants (children aged less than one year) and children aged one to four years, delineated by county and last coverage group.

1095-B Tax Forms: In FY 2019, Hilltop added a MAGI indicator variable to the 2018 1095-B tax form data, which identified the eligibility system that made the eligibility determination so questions from enrollees could be sent to the right agency (the Department, the Department of Human Services, or the MHBE).

Medicaid Rate Setting

In FY 2019, the state of Maryland paid $5.8 billion in capitation payments to the nine HealthChoice MCOs, which provide health insurance for about 1.2 million Medicaid beneficiaries. Hilltop continued to conduct financial analyses to inform HealthChoice payment policy, develop capitation rates for MCOs, conduct financial monitoring of MCOs, and assist the Department with capitation rate recovery. Hilltop also staffed the Department's MCO Rate Setting Committee, provided consultation to the MCOs, and supported the financial review of MCOs performed by state-contracted auditors. In addition, Hilltop developed reimbursement rates for the Program of All-Inclusive Care for the Elderly (PACE).

HealthChoice Rate Setting and Financial Analysis: In FY 2019, Hilltop worked with the Department to develop risk-adjusted capitation payments for MCOs participating in HealthChoice. Maryland's risk-adjusted payment methodology uses the Johns Hopkins University Adjusted Clinical Groups (ACG) Case Mix System. This methodology is continually refined as needed to accommodate program and policy changes. Johns Hopkins provides an annual license to Hilltop for use of the ACG software, and Hilltop contracts with Johns Hopkins for ongoing support with the ACG system and the rate setting methodology.

During each annual rate setting cycle, Hilltop's responsibility for managing the Department's MCO Rate Setting Committee involves scheduling, developing the agendas for, and facilitating a series of seven two-hour public meetings with officials from the Department, the nine MCOs, Hilltop, and the actuarial services firm contracted by Hilltop (see "Competitively Procured Actuarial Services" below). The purpose of these meetings is to review the rate setting methodology and process, discuss methodological and policy issues of concern, present special analyses requested by the Department and/or the MCOs (e.g., regional analyses, constant cohort analyses, cost analyses of new services and pharmaceuticals), and review the economic outlook and trends in other states' managed care rates. Hilltop also schedules and facilitates one-on-one meetings between the Department and each of the nine MCOs to review preliminary rates developed by Hilltop with the assistance of the actuarial services firm. Maryland's managed care rate setting process is highly regarded by federal officials, other states, and health plans for its transparency and collaborative, interactive nature, which allows the MCOs to be active participants. In addition, Maryland's process—by employing the combined services of Hilltop and an actuarial services consulting firm—realizes significant cost savings compared to other states. Most states contract solely with an actuarial firm at much greater cost.

Competitively Procured Actuarial Services: UMBC competitively procures the services of an actuarial services firm to provide consultation to Hilltop on developing HealthChoice risk-adjusted

capitated payment rates for participating MCOs, benchmark those rates against national trends and managed care rates in other states, present the rates to the MCOs, and actuarially certify the rates. CMS requires actuarial certification in order for the state to obtain federal financial participation for HealthChoice. In 2015, UMBC selected Optumas through a competitive procurement process to provide actuarial services for development of HealthChoice rates for CY 2016 through CY 2019. Again in 2018 through a competitive procurement process, UMBC selected Optumas for actuarial services for HealthChoice rates for CY 2020 through CY 2024.[4] In FY 2019, Hilltop worked extensively with Optumas to complete and certify CY 2019 HealthChoice capitation rates under the 2015 contract and initiate development of CY 2020 capitation rates under the 2018 contract.

Recommendations from Report on Managed Care Rate Setting: A 2017 Joint Chairman's Report (JCR) required a study to review potential improvements to Maryland's Medicaid managed care rate setting system. This included a review of potential improvements to the rate-setting system, a review of innovations in other states that have similar systems, and appropriated funding to the Department for the analysis. At the request of the Department, in FY 2018, UMBC managed the procurement process and provided oversight for the study by the contracted firm, Milliman, Inc.[5] In FY 2019, Hilltop provided support to the Department in reviewing and acting on the report's recommendations. Recommendation #8 stated that the Department should "leverage available tools to develop and implement a standardized framework for evaluating and determining risk of high-cost drugs." At the request of the Department, Hilltop planned and convened a one-day meeting on March 13, 2019, with Department and Hilltop staff facilitated by Optumas to examine strategies for addressing high-cost, low-volume specialty drugs in the HealthChoice program.[6] Following the meeting, Optumas reviewed MCO encounter data to provide guidance to define high-cost drug price points and modeled MCO specific risk pool scenarios. Optumas developed several versions of a policy proposal document that included various options for implementation, and Hilltop facilitated several follow-up meetings to discuss the proposals. HIV/AIDS drugs were determined to no longer be high-cost, and the Department decided to carve HIV/AIDS drugs back into the HealthChoice benefit package for CY 2020. Optumas

[4] UNIVERSITY OF MARYLAND BALTIMORE COUNTY REQUEST FOR PROPOSAL # BC-21092-R FOR UMBC ACTUARIAL SERVICES CONTRACT, February 28, 2018.
[5] Milliman, Inc. (2018, May). University of Maryland, Baltimore County Medicaid Managed Care Rate Setting and Payment Innovation Study. Retrieved from https://mmcp.health.maryland.gov/Documents/JCRs/2017/2017%20Joint%20Chairmen%27s%20Report%20on%20Managed%20Care%20Rate-Setting.pdf
[6] Optumas Hilltop SOW (2019, January).

has continued to model additional scenarios, and the Department plans to make further policy adjustments to the high-cost drug policy for CY 2021.

HealthChoice Financial Monitoring: To better understand the cost differences among MCOs and the effect of capitation rates on plan performance, Hilltop examined MCO performance on selected measures and reported its findings to the Department. The report also compared the performance of provider-sponsored organizations (PSOs) to the performance of non-PSOs. In FY 2019, Hilltop analyzed specific variances in membership, premium income, and cost of medical care during CYs 2015 and 2016 and prepared a complete financial report package that analyzed MCO underwriting performance.

Nursing Home and PACE Rate Setting: In FY 2019, Hilltop assisted the Department in developing nursing home "Pay for Performance" scores and analysis and administered a wage survey database. In addition, Hilltop continued to develop the annual calendar year rates for Hopkins Elder Plus, a PACE program in Baltimore City.

Analytics to Support Health Reform

In FY 2019, Hilltop continued to support the Department's implementation of health care reform by conducting financial and policy analyses and providing consultation and technical assistance for the Medicaid expansion, Maryland's Total Cost of Care Model, Health Homes, CFC, and several other initiatives.

Medicaid Expansion

Beginning in CY 2014, the ACA gave states the opportunity and incentives to expand Medicaid eligibility to adults with household incomes up to 138 percent of the FPL. Maryland chose to expand Medicaid. In FY 2019, Hilltop continued to support the Department in monitoring the Medicaid expansion.

Reporting on the Medicaid Population: In FY 2019, Hilltop continued to conduct analyses and provide assistance to the Department in determining trends in service utilization and costs before and after the 2014 Medicaid expansion. At the request of the HSCRC and the Chesapeake Regional Information System for our Patients (CRISP), and with the Department's permission, Hilltop provided CRISP with eligibility and demographic information for all Medicaid participants enrolled through March 31, 2019. These data and accompanying data dictionaries were sent in three transmissions during the year. The HSCRC uses the eligibility information to conduct hospital utilization analyses required for rate setting. Hilltop also included data from the Medicare buy-in file in these transmissions.

Health Insurance Coverage Protection Commission: At the request of the Department, Hilltop reviewed and provided comments on a draft of the Health Insurance Coverage Protection Commission's annual report.

Maryland Total Cost of Care Model

Under an agreement with CMS, Maryland launched the All-Payer Model in 2014 to transform the health care delivery system and improve care while moderating cost growth. The model transformed the way Maryland hospitals provide care, shifting away from a financing system based on volume of services to a system based on hospital-specific global revenues with value-based incentives. The model is designed to coordinate medical treatment for patients served in both hospital and non-hospital settings, to improve health outcomes, and to rein in the growth of health care costs. In January 2019, the state signed a new agreement with CMS for what is now called the Total Cost of Care (TCOC) Model, which will hold the state accountable for total Medicare cost of care spending and new quality and population health targets. The TCOC Model has three

components: the Hospital Payment Program, implemented in 2014 as part of the All Payer Model and formerly known as Global Budget Revenue; the Care Redesign Program implemented in 2017; and the MDPCP implemented in January 2019. In FY 2019, Hilltop provided support and conducted a number of analyses to assist the Department in implementing the TCOC Model.

Total Cost of Care: As part of the requirements under the state's agreement for the TCOC Model with CMS,[7] the HSCRC is required to report on and monitor TCOC. In particular, the HSCRC must monitor trends in health care costs within its regulatory domain and any cost shifting to unregulated settings. At the request of the Department and the HSCRC, Hilltop prepared and submitted the Medicaid TCOC report for CY 2016. The TCOC report is a non-public report of health care utilization and expenditure data that provides the Department and the HSCRC with an enhanced understanding of the shifts in health care services provided to Maryland residents within and between regulated and unregulated settings. Hilltop also revised the template for CY 2017 and completed most of the CY 2017 TCOC report; final submission was pending outstanding data from two of the MCOs.

Hilltop conducted several analyses to assist the Department and the HSCRC in fulfilling the HSCRC's obligation to annually report on the performance of the TCOC Model to CMS. Hilltop performed an analysis of outpatient facility visits with a specified list of procedure codes provided by the HSCRC and identified all corresponding professional services completed on the same date of service as the outpatient facility visits. Hilltop also conducted a request to identify all inpatient and outpatient records with a begin date of service occurring in CY 2016 with an NPI for a regulated hospital and a revenue code from a list provided by the HSCRC. Finally, at the request of the MDPCP, Hilltop performed an analysis to determine whether the providers on the program's list are participating with Medicaid.

TCOC Model Implementation Monitoring: At the request of the Department and the HSCRC, Hilltop continued to provide Medicaid data quarterly to the implementation monitor for the TCOC Model, the Lewin Group. Hilltop also developed and provided data dictionaries and record counts and layouts to assist Lewin evaluators in understanding the data and responded to various questions about the data. During FY 2019, Hilltop extended its contract with the Lewin Group for an additional year.

Hospital System Modernization Workgroups: In FY 2019, Hilltop continued to provide consultation and support to the Medicaid representative of the HSCRC Performance

[7] See https://hscrc.maryland.gov/Documents/Modernization/TCOC-State-Agreement-CMMI-FINAL-Signed-07092018.pdf

Measurement, Payment Models, and TCOC Workgroups by attending meetings and answering various questions about the Medicaid data.

Dual-Eligible Beneficiaries and the TCOC Model: In FY 2019, Hilltop conducted analyses of dual-eligible beneficiaries to support the Department in considering program strategies to address the needs of this population. Hilltop analyzed Medicare and Medicaid claims data to identify the spending distribution of dually eligible individuals within the Johns Hopkins Hospital and Johns Hopkins Bayview catchment areas, as defined using ZIP code service areas and historical hospital utilization. Hilltop also calculated estimates of five- and ten-year dual-eligible expenditures in Maryland using historical, Maryland-specific spending on non-developmentally disabled (DD), full-benefit dual-eligible beneficiaries from 2011 to 2016. Hilltop also updated a number of calculations it made for the FY 2017 chart book titled *Maryland Non-DD Full-Benefit Dual-Eligibles: Selected Demographic and Service Use Data.*

Later in FY 2019, to assist the Department with MDPCP implementation, Hilltop provided two person-level data files of the Health Home dual-eligible participants, including demographics and Health Home enrollment information. In addition, Hilltop provided data on dual-eligible Health Home participants' patterns of receiving evaluation and management services, frequency of utilization by provider type, and continuity of enrollment in the Health Home program. Hilltop also reviewed Health Home provider information to identify which, if any, met certified electronic health record technology (CEHRT) criteria.

Health Homes

Section 2703 of the ACA created the option for state Medicaid programs to establish health homes for participants with chronic conditions. Health homes are intended to improve health outcomes by providing patients an enhanced level of care (LOC) management and care coordination through the integration of somatic and behavioral health services. In FY 2014, Maryland amended its Medicaid state plan to establish a health home program. The program targets populations with behavioral health needs who are at high risk for additional chronic conditions, including those with serious and persistent mental illness, serious emotional problems, and OUD.

Health Home Program Monitoring and Evaluation: In FY 2019, Hilltop continued to conduct several analyses to evaluate and support the Maryland Health Home program. Hilltop conducted an analysis of the relationships between length of enrollment, rates of leaving and returning to the Health Home program, and the proportions of those returning to the same or different Health Home providers. Hilltop produced a draft annual report that updated the 2016 annual report and

described the outcomes of participants in the Maryland Health Home program in 2017 before producing a final annual report.

Community First Choice

Section 2401 of the ACA authorized Community First Choice (CFC), which gives states the option to offer certain community-based services as a state plan benefit to individuals who require an institutional LOC. Maryland implemented CFC in January 2014 after an extensive planning effort in collaboration with Hilltop. The personal assistance services that were previously offered through the Living at Home (LAH) Waiver, the Waiver for Older Adults (WOA), and the Medical Assistance Personal Care Program (MAPC) were consolidated under the Medicaid state plan CFC program. CFC offers self-directed personal assistance services using an agency-provider model. In FY 2019, Hilltop conducted the following analyses to support the Department's CFC operation and monitoring.

Service Utilization and Cost Analyses: Hilltop conducted a number of analyses on service utilization and costs for the long-term services and supports (LTSS) population. Hilltop provided quarterly home and community-based services (HCBS) reports for CFC users and all LTSS users that included service utilization and expenditures by month and fiscal year. This report also provided data on the number of unduplicated state plan personal care users and assisted living participants, and helped the Department to identify the potential overuse of a service. To assist the Department in responding to the Kaiser Family Foundation Annual HCBS Survey, Hilltop calculated the number of unduplicated HCBS state plan personal care users, state plan home health services users, and 1915(c) waiver participants and their expenditures for FYs 2016 through 2018. Similarly, Hilltop calculated participant enrollment and expenditure data to assist the state in answering the National Association of States United for Aging and Disabilities (NASUAD)—now ADvancing States—and AARP Economic Survey.

Flexible Budgeting Methodology: Hilltop continued to assist the Department in expanding its flexible budgeting methodology for CFC in FY 2019. Hilltop completed the development of a set of linear programming models that can be used to optimize the level of each flexible budget group in order to minimize the number of "exceptions"—cases where a participant's requested budget amount is above the recommended budget—while minimizing the growth of those budgets over time.

Home and Community-Based Services

Community-Based Setting Final Rule: On March 17, 2014, CMS issued a Final Rule defining what constitutes an HCBS setting. The goal of the rule is to ensure that individuals served by HCBS waivers are receiving services in integrated settings and are supported in accessing the greater community. The rule's focus is on the outcomes and experiences of the individuals. States must ensure that all HCBS settings comply with the new requirements by completing an assessment of existing state rules, regulations, standards, policies, licensing requirements, and other provider requirements to ensure that settings comply with the HCBS setting requirements. States must be in full compliance with the federal requirements by the timeframe approved in each state's Statewide Transition Plan (STP), but no later than March 17, 2022. CMS issued additional guidance in March 2019 in the form of frequently asked questions regarding the heightened scrutiny process. Specifically, CMS clarified how providers can demonstrate compliance while ensuring beneficiary and family choice

In FY 2019, Hilltop continued to provide support to the Department for site visits that the Department began in FY 2018 to assisted living facility (ALF), medical day care (MDC), and senior center plus (SCP) providers for the purpose of further verifying compliance with the Final Rule. Hilltop developed online data collection tools using Qualtrics surveys and questionnaires and then analyzed the data when requested by the Department.

Hilltop continued to work on ALF provider assessments. Hilltop performed additional analyses on the round one site visit data after all sites had been entered and the data cleaned. Hilltop performed further analysis on ALF sites subject to heightened scrutiny in March 2019. In collaboration with the Department, Hilltop developed an updated ALF provider self-assessment instrument for new ALF providers, an instructional document, and a training video. During this reporting period, Hilltop updated the training video. Hilltop also sent a hard copy of the Qualtrics instrument to the Department.

Hilltop also developed an updated ALF site visit instrument for HCBS final compliance. The instrument allows for site visitors to designate whether the visit is an initial site visit (for new providers) or a follow-up visit (for sites that already had an educational visit in FY 2018). Due to a change in how Medicaid provider numbers are assigned, the new ALF provider self-assessment instrument, the updated residential agreement instrument, and the updated ALF site visit instrument all had to be updated with a space for ePrep—Medicaid's new electronic provider revalidation and enrollment portal—numbers. Additionally, Hilltop added new Department team members to drop-down menus when necessary to the updated ALF site visit instrument and the updated residential agreement.

Other Support

Operational and Evaluative Support for Eligibility Processes: As required by the ACA, in FY 2013, the Department established a new process to determine Medicaid eligibility for individuals enrolled in Modified Adjusted Gross Income (MAGI) coverage groups using a new eligibility system, the MHBE's Maryland Health Connection. During FY 2019, Hilltop performed a number of analyses to support the Department's eligibility processes. Hilltop began conducting a new quarterly report on participants' immigration status, providing demographics and coverage information on this population. Hilltop submitted these new quarterly reports in February and May of 2019. Hilltop also performed analyses to determine a baseline amount of churn—movement in and out of Medicaid—in CY 2017. Hilltop provided the total Medicaid enrollment for the year, the number of program participants who were new in CY 2017, the number who exited the program in CY 2017, and the number who remained continuously enrolled in CY 2017. Hilltop performed a follow-up request to generate the same measures, delineated by those who were auto- vs. manually renewed each month. Hilltop also performed an analysis of enrollment in the transitional medical assistance this coverage group.

Facilitated Maryland Health Connection Enrollment: At the request of the Department, Hilltop analyzed whether the implementation of the option to select an MCO health insurance plan online through the Maryland Health Connection website led to a change in the average length of time taken for participants to enroll in HealthChoice.

Returned Mail: In FY 2019, the Department began tracking Medicaid participants for whom the state received returned mail, indicating an incorrect address. Each month, the Department created two files related to this initiative: an initial file that lists all individuals with a mail return, and a second file that indicates which individuals on the return list were exempted from the mail return process for reasons determined by the Department. Beginning in May 2018, the Department sent Hilltop 18 mail return files each month: one return mail file per MCO and one return mail exception file per MCO. Hilltop appended, unduplicated, and cleaned these files to create monthly cohorts. Hilltop then examined the service utilization of these participants for the past two calendar years.

Periodic Data Matching: The Department requested Hilltop's assistance in estimating the potential enrollment impact of periodic data matching to determine changes in participants' incomes and provided Hilltop with an initial file of households with potential income discrepancies. Hilltop reviewed the file, identified potential errors in the file, and determined that the file did not contain enough information for Hilltop to conduct an evaluation. Hilltop has subsequently been

working with the Department and the MHBE to develop a DUA that would allow the MHBE to send Hilltop the household income data necessary to conduct the evaluation.

Eligibility Verification: The Department has an eligibility verification process that uses the Public Assistance Reporting Information System (PARIS) to identify Maryland Medicaid participants who could potentially be enrolled in Medicaid in other states as well. Maryland Medicaid participants are matched against PARIS on a quarterly basis, and alerts are sent to case workers with indicators of potential enrollment in other states. To track this reporting requirement, the Department requested that Hilltop analyze the initial PARIS reporting files. Hilltop reviewed the files and flagged potential data issues for the Department, and then matched the files against MMIS2 to identify whether any participants were removed from Medicaid eligibility subsequent to the PARIS match, which month the cancellation occurred, and the corresponding eligibility cancellation reason code.

Data Sharing with Comptroller: In FY 2017, the Department and the Comptroller's Office entered into a data-sharing agreement allowing the Department to share a person-level list of Medicaid participants with the Comptroller's Office for the purpose of identifying the number of Medicaid participants who filed a tax return. Previously, Hilltop provided the Comptroller's Office with person-level data sets containing participants enrolled in CY 2014 through 2016. During FY 2019, the Comptroller reported back to Medicaid the number of participants who filed a tax return each year by age group, coverage group, and dual-eligibility status for CY 2016. Hilltop reviewed the Comptroller's analysis and provided the Department with feedback regarding potential errors. Hilltop conducted a follow-up analysis to determine whether those who lost coverage subsequently re-enrolled and then calculated the corresponding average length of the gap period.

Continuity of Care Study: In the fall of 2012, the MHBE convened a stakeholder advisory committee to develop recommendations to promote continuity of care for individuals transitioning between health plans.[8] In response to these recommendations, the Maryland Health Progress Act of 2013[9] established new statutory continuity of care requirements to advance Maryland's progress in protecting residents from harmful disruptions in health care services and to promote the reasonable continuity of health care for all individuals who may be transitioning between plans.[10] This law also requires the MHBE, the Department, the Maryland Insurance Administration (MIA), and MHCC to conduct a study on the implementation and efficacy of the continuity of care requirements. The study should include recommendations for additional

[8] For more information, see https://www.marylandhbe.com/wp-content/uploads/2016/02/MHBE-CoC-Recommendations-01.04.2013.pdf
[9] 2013 Md. Laws ch. 159, Sec. 5.
[10] Ins. Art. § 15-140(b), Ann. Code of MD.

legislation (if any) to increase the effectiveness of Maryland's efforts to promote continuity of care. The study's original due date to the Maryland General Assembly of December 1, 2017, was postponed to 2018. The MHBE contracted with Hilltop to conduct the study, which was submitted on October 31, 2018. As part of the study, Hilltop developed a data request template and distributed it to the commercial carriers and the Medicaid MCOs, asking them to report on participant requests for continuity of care protections. After submitting the report to the MHBE, Hilltop created a separate summary of MCO responses for the Department.

Financial Analysis

In FY 2019, Hilltop continued to provide the Department with consultation and financial analysis related to Medicaid provider reimbursement rates and physician payments. Hilltop also continued the process of updating the fees paid to trauma centers by the Trauma and Emergency Medical Fund.

Reimbursement Rates Fairness Act: Pursuant to Senate Bill (SB) 481 (Chapter 464 of the Acts of 2002), the Department created an annual process to set the FFS reimbursement rates for Medicaid and CHIP in a manner that ensures provider participation. The law also directs the Department to submit an annual report to the Governor and various state House and Senate committees. In November 2018, on behalf of the Department, Hilltop completed the *eighteenth annual report* examining physician fees paid by Maryland Medicaid and CHIP. The report includes a comparison of the Maryland Medicaid rates with Medicare and neighboring states' rates for the same services; a ranking of each state's reimbursement rates compared to Medicare reimbursement rates; and a discussion of whether the FFS rates and MCO provider rates will exceed the rates paid under the Medicare fee schedule.

Physician Fee Chart Book: In FY 2019, Hilltop produced a chart book comparing Maryland and neighboring states' Medicaid fees to Medicare fees. The chart book also compares the physician fees of Washington DC, Delaware, Pennsylvania, Virginia, and West Virginia.

Physician Fees: In addition to the analyses described above, in FY 2019, Hilltop provided consultation and technical assistance to the Department regarding increasing physician fees. Hilltop estimated the percentage of Medicaid fees to Medicare fees for all procedures, as well as separately for Evaluation and Management (E&M) procedures.

Evaluation and Management Procedures: In consultation with the Department, Hilltop estimated the costs of E&M procedures using the 2019 Medicare fees for estimating costs of fee changes for these procedures. Hilltop conducted an analysis of Medicaid reimbursement rates for E&M procedures, categorizing the relevant procedure codes into four tiers: 1) E&M codes in which Medicaid paid above 100 percent of Medicare rates; 2) E&M codes in which Medicaid paid between 93 and 100 percent of Medicare reimbursement rates; 3) E&M codes in which Medicaid did not cover the procedure or its fee was equal to zero; and 4) new procedure codes (in the range of 99451 to 99457) in which Medicare had a reimbursement rate that was greater than zero but the procedure was not included in the current Medicaid fee schedule.

Hilltop also estimated costs of increasing reimbursement rates for E&M procedures to 93, 94, and 95 percent of Medicare rates and then identified reimbursement rates for procedures that were set at a minimum of 93 percent and a maximum of 100 percent of Medicare rates. Reimbursement rates that exceeded Medicare fees were reduced to 100 percent of Medicare fees, and reimbursement rates that were less than 93 percent of Medicare fees were raised to 93 percent of Medicare rates. Hilltop provided two sets of data files: one for uploading to the MMIS and one for distribution to MCOs. These new reimbursement rates became effective July 1, 2019, for FY 2020.

Laboratory Procedures: Hilltop aligned Medicaid fees for laboratory procedures with the 2019 Medicare laboratory reimbursement rates and reduced fees for procedures that exceeded Medicare reimbursement rates. Hilltop set Medicaid reimbursement rates for new laboratory procedures that were not previously included in the Medicaid fee schedule equal to 79.5 percent of Medicare fees and provided two sets of files containing the new reimbursement rates for uploading to the MMIS and for distribution to the MCOs.

Other Analyses and Technical Support

In FY 2019, Hilltop conducted extensive analysis for the Department to support program and policy deliberations related to Medicaid coverage, health services utilization, provider participation in the Medicaid program, behavioral health services, dental services, and LTSS. Hilltop also provided data analytics for federal grant applications submitted by the Department.

Coverage and Health Services Utilization

MCO Enrollment: To assist the Department with a Freedom of Information Act (FOIA) request from a consultancy firm, Hilltop conducted an analysis of the number of HealthChoice participants enrolled in an MCO in January 2019, delineated by MCO, county, and coverage category.

Medicaid Enrollment: To assist with a request from the Medicaid Director, Hilltop calculated the number of children aged 0 to 18 years enrolled in Medicaid and CHIP, CHIP only, and Medicaid only—delineated by age, coverage category, and month—for CY 2018.

CARTS Reporting: Hilltop contributed to the Department's annual report of core measures to CMS using the CHIP Annual Reporting Template System (CARTS) by analyzing Title XIX (Medicaid) and XXI (CHIP) enrollment for children newly enrolled in the second quarter of federal fiscal year (FFY) 2018.

Medicaid and CHIP Program (MACPro) Reporting: CMS requires states to report on the outcomes of HealthChoice and Health Homes through a reporting system called MACPro. To help the Department complete its quality reporting to CMS for CY 2017, Hilltop analyzed the data and produced these measures: ambulatory care/ED visits, inpatient utilization, prevention quality indicators (avoidable admissions), NF utilization, adult body mass index, plan all-cause readmission rate, initiation and engagement of alcohol and other drug dependence treatment, follow-up after hospitalization for mental illness, and cost savings. In addition, Hilltop reviewed and prepared responses to the CMS Seek More Information (SMI) questions related to the MACPro measure results.

Annual Abortion Report: To assist the Department in providing information for the Department of Legislative Services annual abortion report, Hilltop conducted an analysis of Medicaid participants aged 15 to 44 years who had abortions from FY 2016 to FY 2018, and calculated the number and total costs of these services. Hilltop also performed a subsequent analysis to calculate the age of Medicaid participants aged 17 years or younger who had at least one abortion event during FY 2017 and FY 2018.

Hepatitis C: Hilltop calculated the number of Medicaid participants who received a hepatitis C virus (HCV) diagnosis, as well as the number of participants who received treatment for these conditions from September 30, 2013, to September 29, 2018. Hilltop conducted a separate analysis of the HCV data for the Hepatitis Affinity Group that included information about prevalence and treatment for CY 2017.

Vaccinations: At the request of the Department's Center for Immunizations, Hilltop conducted an analysis of meningococcal vaccines given to children who turned 17 in CY 2017, including the number who received the vaccine in the 12 months prior to their 17th birthday and the number who also received the vaccine between the ages of 11 and 12 years. Hilltop completed a separate request to identify all claims and encounters with a procedure code provided by the Vaccines for Children Program in CYs 2016 through 2018. Hilltop identified how many of these vaccines were accompanied by a modifier indicating state and/or federally funded programs.

Hearing Aids and Cochlear Implants: In response to a request for a fiscal note, Hilltop conducted an analysis of the number of participants and services for a specified list of procedure codes for audiology visits. Hilltop performed a follow-up analysis to include additional procedure codes.

Provider Participation

Electronic Health Record Incentive Program: Hilltop calculated the percentage of Medicaid outpatient ED encounters for Maryland hospitals in FY 2017 and verified the eligibility of all hospitals to receive payment (Medicaid patients must make up at least 10 percent of utilization [the total sum of inpatient days and ED visits]). Hilltop estimated electronic health record payments for a hospital that newly converted to acute care services and became eligible to receive incentives. To do this, Hilltop calculated the number of inpatient days, breaking out the total Medicaid days, days for dual eligibles, and Medicaid days excluding CHIP and dual-eligible days, and then projected future patient load.

Provider Capacity Quarterly Reports: Hilltop provides the Department with quarterly reports on provider capacity, provider specialty, and PCPs, delineated by region and local access area.

Long-Term Services and Supports

In FY 2019, Hilltop continued to track HCBS expenditures, conducted analyses to assist the Department in its use of the interRAI core standardized assessment tool, and conducted analyses using data from MMIS, MDS, and *LTSSMaryland*—the state's integrated LTSS tracking system—including interRAI assessment data and plans of service.

Nursing Facilities: Hilltop continued its work with the Department on the use of NF services. Hilltop determined the predictive value of questions present on the MDS assessment for subsequent hospitalization during a Medicaid NF stay and refined the methodology to assess the predictive value of questions present on the screening tool of subsequent NF admission. Hilltop also examined length of stay (LOS) for skilled nursing facility (SNF) stays that ended with the patient being either discharged to an acute care hospital or transferred to another nursing home, as well as the reason for any post-discharge hospitalizations. Hilltop also examined the NF cost of individuals on the Community Options (CO) registry during CY 2017.

Autism Waiver Reporting: Using the reporting mechanism it developed for the Department, Hilltop continued to analyze the "gray area" population in the Autism Waiver: individuals who would not be eligible for Medicaid state plan services if they were not enrolled in this waiver. The Department bills the Maryland State Department of Education (MSDE) for the cost of Autism Waiver services and state plan services for the gray area population. Hilltop produced quarterly reports to support the Department's invoicing to MSDE. In addition, Hilltop sends a monthly census report of the individuals on the Autism Waiver, delineated by age, county, coverage group, and, as applicable, disenrollment reason.

Waiver Assurance Reporting: Hilltop produced quarterly reports for the Department describing the CO Waiver assurance measures (percentage of waiver claims within a waiver span, percentage of waiver claims outside of a waiver span, percentage of quarterly participants with an LOC determination in the prior year, and amount of plan of service (POS) dollars claimed). In FY 2019, Hilltop began quarterly reports on the CFC population using these same measures.

CMS 372 Reports: To help the Department determine cost neutrality for the state's 1915(c) waivers—the CO Waiver, Autism Waiver, Community Pathways Waiver, Brain Injury (BI) Waiver, MDC Waiver, and Model Waiver—Hilltop calculated the number of waiver recipients, the annual waiver expenditures, the average per capita annual expenditure for all other Medicaid services expenditures, the average LOS of waiver coverage by LOC, and the total days of waiver coverage in FY 2017. Hilltop also provided information as requested to inform budget decisions and waiver renewals and responses to CMS's questions regarding the 372 reports. In addition, Hilltop calculated the number of full and partial MFP participants in FY 2017, delineated by waiver.

CO Waiver Reporting: In addition to standard 372 and MFP reporting, Hilltop provided the Department with the average cost to Medicaid for a person enrolling in the CO Waiver from the registry versus other entry points.

CMS MFP Benchmarks: In FY 2019, Hilltop continued to produce semi-annual reports for CMS on the state's progress in achieving MFP benchmarks. These reports provide information on HCBS expenditures for all Medicaid recipients, including expenditures for all 1915(c) waiver programs, home health services, and personal care if provided as a state plan optional service. The reports also provide information on HCBS spending on MFP participants (qualified, demonstration, and supplemental services), and HCBS capitated rate programs (to the extent that HCBS spending can be separated from the total capitated rate). Hilltop also generated ad hoc reports to assist the Department in setting future MFP target benchmarks.

LTSS Chart Books: In FY 2019, Hilltop began the production of four chart books in its *Medicaid Long-Term Services and Supports in Maryland* series, which summarizes demographic, service utilization, and expenditure data for participants in the state's 1915(c) waivers. The chart books encompass FY 2013 through FY 2017 and include *Volume 1: The Autism Waiver, Volume 2: The BI Waiver, Volume 3: The Community Pathways Waiver,* and *Volume 4: The Model Waiver*. Using the Tableau® platform this year for the first time, Hilltop automated the process for creating these chart books. In addition, Hilltop submitted the final versions of *Volume 5: HCBS* and *Volume 6: Nursing Facilities*.

Service Utilization and Expenditures: In addition to the analyses conducted for the chart books, Hilltop conducted a number of analyses on service use and expenditures. Hilltop calculated the monthly number of CFC participants who utilized a service, the total expenditures for the service, and the per-person expenditures for the service from April 2017 through October 2018. Hilltop also calculated the number of participants who used a service, the number of service units used, and the total and per-person expenditures for each HCBS service during this period. For the CO, MDC, Increased Community Services (ICS), and CFC-only populations, Hilltop calculated the monthly number of users, total expenditures, and per-person expenditures for each service—further delineated by service received, service received outside of span, and service received during span—for April 2017 through October 2018. Hilltop performed an analysis of peer outreach and options counseling efforts in Maryland using data from *LTSSMaryland* as well as MMIS. Hilltop updated a prior analysis identifying the scope of overlapping case management services. Hilltop also examined the disenrollment patterns of CFC participants.

StateStat: Hilltop produced monthly updates for Maryland's StateStat report on the cumulative number of unduplicated waiver participants in Maryland from January 1, 2001, to May 31, 2019, for MFP and the CO and Autism Waivers.

Standardized Assessment Tool Studies: In FY 2019, Hilltop continued to conduct analyses using data from the interRAI assessment tool to help the Department monitor agency operations. Hilltop

crosswalked the interRAI data in the *LTSSMaryland* backend with a standardized coding system developed by the University of Waterloo that anonymized identifying information for both the client and nurse assessor. Hilltop also finalized the algorithm to identify an individual's risk of nursing home admission based on their screening tool responses.

Plans of Service: Hilltop produced quarterly reports calculating the amount of time from when a supports planner first submits a POS to the Department until the final decision on the POS is made.

LTSS Enrollment Reports: In FY 2019, Hilltop prepared reports on individuals' last steps in the enrollment process for LTSS. Weekly reports tracked enrollment progress for those who 1) had completed an MFP questionnaire in the previous month, 2) had a Community Personal Assistance Services (CPAS) claim in the past six months but were not yet enrolled in MFP, and 3) had been assigned a supports planning agency (SPA) but were not enrolled in a waiver or who had an MAPC claim but had not been assigned an SPA. Reports also identified any care coordinators who had more than 35 billed hours in a pay period, as well as individuals who had a negative self-reported living situation on the quality survey. In addition, Hilltop modified the LTSS weekly reports to accommodate the new SQL database structure. Hilltop assisted the Department in reporting on MFP transitions by identifying all activities related to housing assessments and applications for this population.

Private Duty Nursing: To assist in analyzing the fiscal impact of adding private duty nursing (PDN) to the Medicaid state plan, Hilltop worked with the Department to prepare a fiscal note for SB 660. Hilltop examined enrollment and utilization for nursing home spend-down individuals, REM participants, PDN users, and Employed Individuals with Disabilities (EID) participants. In addition, in response to a legislative request during the 2019 session, Hilltop conducted an analysis of the average costs of, the number of inpatient admissions to, and the number of 30-day readmissions for children aged 0 to 20 years in CY 2017 to PDN services.

Participants in Nursing Facilities: To assist the Department in developing a JCR, Hilltop used MDS data to examine LOS for SNF stays that ended with the patient being either discharged to an acute care hospital or transferred to another nursing home, and the reasons for any post-discharge hospitalizations.

HB 1696: HB 1696 established a task force to study access to home health care for children and adults with medical disabilities and required the task force to make recommendations to the Legislature on access and reimbursement rates. To assist the Department in the study, Hilltop calculated the number of individuals who used licensed practical nurse (LPN) services between CY 2015 and CY 2017; analyzed prior authorization data to determine the percentage of authorized

services that were used, the level of usage, and the percentage authorized but not used; and analyzed the utilization shifts of LPN services to (and from) other home health care services. In addition, to assist the Department in preparing a fiscal note for the bill, Hilltop performed an analysis of the unit costs for specified licensed practical nurse and nursing assistant services in CY 2017. Hilltop performed a follow-up analysis to include additional procedure codes.

SB 700: Hilltop assisted the Department in determining the fiscal impact of SB 700—which would prohibit the Department from having a waiting list for the CO Waiver—by examining NF costs during CY 2017 for individuals who were on the registry as of January 1, 2017, and individuals added to the registry during CY 2017. Hilltop also examined the reasons for deactivation from the registry for individuals in this group.

Behavioral Health Services

Screening, Brief Intervention, and Referral to Treatment (SBIRT): SBIRT is an early intervention approach for individuals with nondependent substance use to effectively help them before they need more extensive or specialized treatment.[11] Health care providers using SBIRT ask patients about substance use during routine medical and dental visits, provide brief advice, and then, if appropriate, refer patients who are at risk of SUDs to more intensive treatment.[12] At the Department's request, Hilltop examined the use of SBIRT services among Maryland Medicaid participants. Hilltop updated its previous analysis of all participants who used one or more SBIRT services and the corresponding number of visits and services, delineated by individual provider and MCO.

Behavioral Health Collaborative Care Model JCR: In FY 2019, the Department requested that Hilltop update its previous analyses addressing primary behavioral health services delivered by MCOs and the projected benefits and cost savings from implementing a collaborative care model. These analyses included the number of participants enrolled in an ACA expansion coverage group, their treatment for a SUD, and the total cost for behavioral health services from CY 2015 to CY 2017. Hilltop also calculated 1) the number of HealthChoice participants with a behavioral health diagnosis, categorized as having an MHD, SUD, or both, delineated by MCO, for CY 2017, and 2) the number of participants diagnosed with depression who receive services from their MCO,

[11] CMS Medicare Learning Network. (2019, February) *mln Booklet: SCREENING, BRIEF INTERVENTION, AND REFERRAL TO TREATMENT (SBIRT) SERVICES*. Retrieved from https://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/downloads/SBIRT_Factsheet_ICN904084.pdf

[12] Office of National Drug Control Policy, Substance Abuse and Mental Health Services Administration. (2012, July). *Fact sheet: Screening, Brief Intervention, and Referral to Treatment*. Retrieved from www.healthsciences.utah.edu/utahaddictioncenter/_internal/sbirt-fact-sheet.pdf

delineated by MCO, for CY 2016 and CY 2017. Hilltop then fulfilled a request to provide the number of participants diagnosed with depression who received services from their MCO during CY 2017.

Section 1115 Waiver Planning: In 2016, CMS approved Maryland Medicaid to expand coverage to include SUD treatment in IMDs. Effective July 1, 2017, the approval permitted residential SUD services to be provided in IMD settings to Medicaid-eligible individuals aged 21 to 64 for American Society of Addiction Medicine (ASAM) levels 3.1, 3.3, 3.5, 3.7, and 3.7-WM (licensed as 3.7D in Maryland) for up to two non-consecutive 30-day stays in a one-year period. On January 1, 2019, the Department phased in coverage of ASAM level 3.1. Hilltop reviewed technical specifications provided by CMS on SUD measures to evaluate the impact of the §1115 waiver, identified similar measures that Hilltop conducts, and compared the HEDIS definition of SUD and the definition outlined in the Code of Maryland Regulations (COMAR). Hilltop then provided comments on the proposed adjustments to the monitoring plan and suggested alternatives that would align more closely with HEDIS and other standardized measures.

Mental Health Parity: In FY 2019, the Department conducted a second survey of the MCOs and Beacon Health Options, the Department's behavioral health administrative services organization (ASO), to determine compliance with parity non-quantitative treatment limit requirements. The Department shared findings with Hilltop, and Hilltop reviewed and offered comments on the results. Hilltop also provided technical support and assisted the Department in convening a parity stakeholder meeting held on October 4, 2018.

Corrective Managed Care Program: The Corrective Managed Care (CMC) Program identifies participants who may be receiving excessive quantities of controlled substances, especially when multiple prescribers and pharmacies are involved. If—despite the best efforts of the prescriber and pharmacist—there continues to be overutilization or perceived misuse of a controlled substance by a member, then the member can be "locked in" to a single pharmacy. Under a lock-in pharmacy agreement, the member will be required to fill prescriptions for all medications at one predetermined pharmacy. On behalf of the Department and at the request of the MCOs, Hilltop continued to perform the administrative procedures to lock in designated Medicaid participants. In addition, Hilltop continued to answer questions for the MCOs related to pharmacy NPI records and lock-in start and end dates, and to ensure that all HIPAA requirements for confidentiality and protection of information are followed.

Dual Diagnosis of HIV and Behavioral Health: Hilltop performed an analysis of Medicaid participants with a dual diagnosis of HIV and behavioral health conditions for CYs 2013 through 2017. The analysis informed the Department's participation on the HIV Services Planning Council.

Commission to Study Mental and Behavioral Health: In January 2019, Lt. Governor Rutherford announced *Executive Order 01.01.2019.02*, signed by Governor Hogan, establishing the Commission to Study Mental and Behavioral Health in Maryland. The Commission, chaired by Lt. Governor Rutherford, is tasked with studying mental health in Maryland, including access to mental health services and the link between mental health issues and SUDs. The Commission includes representatives from each branch of state government, representatives from the Maryland Departments of Health, Public Safety and Correctional Services, and Human Services, as well as the Maryland State Police, the MIA, the Opioid Operational Command Center, and six members of the public with experience related to mental health. In May 2019, the Department requested that Hilltop provide staffing support to this Commission. Hilltop attended the Commission's third meeting on May 29, 2019, in Prince George's County. Hilltop also provided staff support to the Medicaid Director in his role as co-chair of the Commission's Finance Subcommittee, which is also co-chaired by the Insurance Commissioner. Hilltop worked with MIA staff to schedule and develop meeting agendas and notes for the subcommittee meetings held on May 28 and June 17. Hilltop also worked with MIA staff to draft the subcommittee's interim report for inclusion in the Commission's overall interim report to be published in July 2019.

Behavioral Health System of Care: Two bills were introduced—but not passed—during the Maryland 2019 legislative session that sought to change the delivery and financing of Medicaid behavioral health services. As a result of the corresponding discussions, the chairs of the Senate Finance Committee and the Health and Government Operations Committee requested the Department to convene a System of Care Workgroup to examine and make recommendations on how the state should provide, administer, and finance behavioral health services in conjunction with the TCOC model. Recommendations should consider increasing the coordination and quality of somatic and behavioral health care for Medicaid enrollees, cost efficiency, and promoting access to services. In addition, the workgroup should consider how behavioral health services will be coordinated with MCOs. Initial workgroup findings are due prior to the 2020 legislative session. In May 2019, the Department requested Hilltop to provide project management support to these System of Care efforts and to help ensure coordination with the Governor's Commission described above. Hilltop developed meeting and planning materials for two internal staff meetings held on June 18 and June 28, 2019. Hilltop also helped create workgroup participant lists and invitation letters, and worked with the Department to distribute and track responses to invitations. Hilltop worked with the Medicaid director to update his internal planning documents, developed a meeting schedule, and started planning upcoming meetings.

Services to Address Opioid Addiction: In FY 2019, Hilltop conducted a number of analyses to assist the Department in addressing opioid addiction.

HEDIS Opioid Measures: Hilltop conducted an analysis to help the Department with five measures to assess opioid utilization among Medicaid participants for CY 2016 through CY 2018. Hilltop also provided the data specifications for the HEDIS 2019 opioid utilization measures for the MCOs. Hilltop updated the PowerPoint presentation for the Maryland Medicaid Quality Assurance Liaison Committee meeting on the five HEDIS Opioid Measures for CY 2016 to CY 2018. Hilltop then revised specifications for the five opioid measures for the MCOs and provided a summary outlining the updates and corrections made to the measures and any deviations from the methodology outlined in the HEDIS technical specifications.

Using the HEDIS definition and modified HEDIS measures, Hilltop conducted analyses to assess the following:

- The number and percentage of Medicaid participants with use of opioids at high dosages (UOD), delineated by MCO
- The percentage of participants aged 13 years and older who received an ED service with a principal diagnosis of drug/alcohol abuse or dependence and who had a follow-up ambulatory care visit or outpatient visit
- The number of Medicaid participants 18 years and older receiving opioids from multiple providers and pharmacies and the number of participants receiving opioids from multiple providers, delineated by MCO
- The number and percentage of participants with a new opioid prescription, delineated by the number of medication days supplied in 2019
    - Hilltop used a new HEDIS measure, Risk of Continued Opioid Use (COU), for this analysis

Overdoses: In FY 2019, Hilltop conducted a number of analyses related to overdoses. Hilltop matched vital statistics data with Medicaid data to calculate the number of Medicaid participants who died of an overdose (by an opioid or other drug) in CY 2017 or CY 2018. Hilltop also conducted the same analysis of Medicaid participants who died of an overdose in CY 2015 through CY 2018 and provided demographic characteristics of these participants. Hilltop completed a request to summarize health care utilization (ambulatory care visits, outpatient ED visits, and inpatient admissions) among Medicaid participants who had a fatal overdose from CY 2015 to CY 2018. Hilltop then conducted an analysis of the number of Medicaid participants with a fatal overdose who had an ED visit or inpatient hospital admission with a diagnosis of non-fatal opioid poisoning from CY 2015 to CY 2018 and noted whether or not the ED visit or inpatient admission occurred near the

participant's date of death or within the calendar year. Hilltop also conducted analyses of the receipt of medication-assisted treatment (MAT) and counseling among Medicaid participants who had a fatal overdose in CY 2018, as well as from CY 2015 to CY 2018.

Medication-Assisted Treatment: Hilltop provided monthly reports on MAT utilization for SUDs, focusing on three medications: buprenorphine, methadone, and naltrexone (Vivitrol). Hilltop provided utilization data for Medicaid participants for the months spanning January 2010 through May 2019. In addition, Hilltop provided utilization data by county for Medicaid participants in April and May 2019.

Naloxone: Hilltop fulfilled requests to provide updated counts of the total number of naloxone prescriptions (a reversing agent for opioid overdose) received by Medicaid participants, as well as the number of Medicaid participants who received at least one prescription in FY 2016 through FY 2018.

Multi-State Opioid Use Disorder Study: On behalf of the Department, Hilltop participated in a pilot study with research partners from SUPLN. Maryland is one of several SUPLN states participating in the *Medicaid Outcomes Distributed Research Network* (MODRN). MODRN assesses OUD within Medicaid across states, analyzing an assortment of utilization, access, and quality measures. For the Department, Hilltop provided a summary of the OUD measures being generated for the multi-state OUD group, as well as detailed results and specifications for particular MODRN measures as requested, including MAT rates for enrollees with OUD, continuity of pharmacotherapy, HCV prevalence rates, and follow-up care after visiting the ED. In addition, Hilltop sent the Department draft presentations resulting from MODRN work for review and approval before dissemination. Hilltop also provided the Department with a table to illustrate the differences between MODRN's definitions of OUD and SUD compared to HEDIS definitions.

Tobacco Cessation: Hilltop calculated the number and duration of tobacco and smoking cessation counseling visits completed by Medicaid participants in CY 2017. Hilltop also updated the analysis to include a breakdown of the participants who had only one counseling visit and those with two or more visits by procedure code.

Behavioral Health Services for Children: Hilltop calculated all behavioral health services provided to children enrolled in Medicaid, delineated by county and procedure code, and conducted an additional analysis of services provided at school-based health centers.

Dental Services

Dental Services for Individuals Formerly in Foster Care: In FY 2019, Hilltop analyzed the use of Medicaid dental services by participants formerly in foster care for CY 2018. Measures included the number and percentage of former foster care participants enrolled in Medicaid for 90 days, 320 days, or any period of time, who had dental services in CY 2018, by region and by type of service. In addition, Hilltop measured the percentage by region of foster children enrolled in Medicaid for any period who received a preventive/diagnostic visit followed by a restorative visit in CY 2018. To determine reductions in ED use, Hilltop counted foster children enrolled in Medicaid for any period who had an ED visit with a dental primary diagnosis or a dental procedure code in CY 2018, by region.

Dental Joint Chairmen's Report: In FY 2019, to assist the Department in its response to the Maryland General Assembly, Hilltop performed an analysis on the utilization of Medicaid dental services by children, pregnant women, and adults for CY 2017. Hilltop analyzed the use of dental service by Medicaid enrollees in the calendar year, by region, type of service, and by age groups: children between 0-20 and 4-20, adults 21-64, and pregnant women 14 and older. The supply of dental services was measured by the number of dentists participating in Medicaid who billed one or more services or billed more than $10,000, by region.

Other Data Analytics and Support

Maryland HIV Medicaid Affinity Group: In FY 2017, the Department convened the Maryland HIV Medicaid Affinity Group, involving Medicaid and the Prevention and Health Promotion Administration (PHPA). The purpose of this group is to establish consistent and frequent (at least monthly) data exchanges to better inform both administrations about Medicaid participant HIV testing and care continuum participation, provide richer information for linkage and re-engagement efforts, and form the basis for quality improvement efforts with Medicaid payers and providers. Hilltop's role is to provide technical support and analytics—specifically to match participants from PHPA HIV surveillance data to Medicaid eligibility data and extract service utilization data for these participants from MMIS2. In FY 2019, using data from the Enhanced HIV/AIDS Reporting System (eHARS), Hilltop identified the number of Medicaid participants with a diagnosis of HIV/AIDS from CY 2014 to CY 2017, as well as the number of Maryland residents with HIV/AIDS who are enrolled in Medicaid. Hilltop worked with the Department to revise the method for identifying Maryland residents enrolled in Medicaid with HIV/AIDS who received pre-exposure prophylaxis (PrEP) and completed a revised analysis of the number of Medicaid participants with a diagnosis of HIV/AIDS from CY 2014 to CY 2017.

Greater Baltimore HIV Health Services Planning Committee: Hilltop assisted the Department in completing a request for the Greater Baltimore HIV Health Services Planning Committee to identify the number, demographics, and service utilization—completion of diagnostic (viral load and CD4) testing for HIV, ambulatory care visits, outpatient ED visits, inpatient admissions, HIV screenings, and the receipt of PrEP—in CY 2017 for Medicaid participants 50 years of age and older with a diagnosis of HIV/AIDS. Hilltop also conducted an analysis of the number of Medicaid participants with HIV/AIDS and a co-occurring behavioral health diagnosis of MHD and/or SUD from CY 2013 to CY 2017.

National Diabetes Prevention Program: The National Diabetes Prevention Program runs the Lifestyle Change Program, an evidence-based program established by the Centers for Disease Control and Prevention (CDC) to prevent or delay the onset of type 2 diabetes. The Department recently received approval to expand coverage of the Lifestyle Change Program to all eligible HealthChoice participants. In FY 2019, Hilltop assisted the Department in evaluating the outcomes of the program, received data from some of the MCOs, and provided a summary of the quality of these data. In addition, Hilltop performed an analysis of the prevalence of prediabetes in the HealthChoice population, excluding participants who were ever diagnosed with diabetes or who were pregnant in the measurement year.

Diabetes in Baltimore City: Hilltop calculated the number of Medicaid participants who resided in Baltimore City with a diagnosis of diabetes, delineated by ZIP code, for CY 2013 to CY 2017 using the definition from the HEDIS measure Comprehensive Diabetes Care, which includes type 1, type 2, and gestational diabetes.

Telehealth: In FY 2019, Hilltop analyzed telehealth frequency and costs of claims for FY 2017 and FY 2018, delineated by procedure code and payer used to deliver telehealth services.

Vaccines: Hilltop identified the number of Medicaid participants with a Vaccine for Children (VFC) visit and the total number of VFC visits from CY 2016 to CY 2018. Hilltop also identified the number of children aged 17 who received the meningococcal vaccine (MCV4) in CY 2017, and what percentage of these children also had the vaccine between their 11^{th} and 12^{th} birthday. In addition, Hilltop analyzed the number of adolescent females enrolled in Medicaid who received two or three human papillomavirus (HPV) vaccines, as of the year they turned 13, from CY 2013 to CY 2017.

Ambulance Services: At the Department's request, Hilltop conducted an analysis of the number of Medicaid participants who used an ambulance service or emergency transport to visit the ED and had a diagnosis associated with housing or economic circumstances from CY 2016 to CY 2017.

Hilltop also conducted an analysis of the number of Medicaid participants who used an ambulance service or emergency transportation to visit the ED for a non-emergent visit from CY 2016 to CY 2017.

Inpatient Admissions: Hilltop analyzed the number of inpatient admissions and inpatient bed days, delineated by last MCO and payer, from CY 2013 to CY 2017.

Refugees: In FY 2019, Hilltop identified and provided a count of refugees enrolled in Medicaid from CY 2013 to CY 2017. To accomplish this task, Hilltop compared a list of refugees provided by the Department and completed a matching process with Medicaid enrollment data using different algorithms.

Cannabis for Medical Reasons: In FY 2019, Hilltop conducted an analysis to identify Medicaid participants who, after registering with the Maryland Medical Cannabis Commission, were authorized to receive cannabis for medical reasons as of October 2018.

Data Analytics for Federal Grant Application

Maternal and Child Health Block Grant: The Title V Maternal and Child Health (MCH) block grant provides funding to states to support initiatives aimed at improving the health of mothers and children. The grant application includes a list of 22 questions pertaining to Medicaid and the Maryland Children's Health Program (MCHP) enrollment and service utilization by pregnant women, infants, and children in CY 2018. As in past years, Hilltop analyzed enrollment and utilization data and provided responses to 18 questions on the 2019 application.

Integrated Care for Kids (InCK): The Center for Medicare and Medicaid Innovation (CMMI) offered grants to pilot and evaluate a new pediatric model to combat the nation's opioid crisis. The InCK Model is a child-centered local service delivery and state payment model to improve the health of and reduce expenditures for children under the age of 21 covered by Medicaid and CHIP. During FY 2019, Hilltop supplied the Department with data on children with high-cost, high-service use diseases for CY 2017 to support the Department's application for this grant. Hilltop analyzed the enrollment and health care use of children in Medicaid who were residents of the area served by the East Baltimore Community Partnership, as well as residents of Anne Arundel County, Baltimore City, and Prince George's County. Hilltop also identified the number of ED and inpatient admissions for behavioral health conditions among children in Medicaid and summarized the total cost for residents of the three counties; calculated the number of children with diagnoses related to social determinants of health (e.g., housing and socioeconomic concerns); and calculated the number of children with a diagnosis of sickle cell anemia, attention-deficit/hyperactivity disorder (ADHD), and neonatal abstinence syndrome (NAS). Hilltop then identified the number of children

with two or more ED visits, two or more inpatient admissions, and the number of newborns. Hilltop also generated data on children in Medicaid, defining tiers of ACG scores representing higher and lower health status. Using these definitions, Hilltop summarized the total per member per month (PMPM) cost for high-need children in Prince George's County and Baltimore City. Finally, Hilltop provided inpatient, outpatient, and total costs for children in foster care who had asthma and sickle cell disease, with and without behavioral health comorbidities.

Maternal Opioid Misuse (MOM): CMS announced the Maternal Opioid Misuse (MOM) model grant opportunity to better align and coordinate care of pregnant and postpartum Medicaid beneficiaries with OUDs. Hilltop assisted the Department in its application for this grant by providing data on pregnant women, new mothers, and infants. Hilltop calculated the number of mother and infant birth pairs with and without MOM and provided the Department with measure definitions for OUD, NAS, and identifying a Neonatal Intensive Care Unit (NICU). Hilltop then compared the use of NICU days between infants born with and without NAS for CY 2013 through CY 2017. Hilltop also identified the number of ED visits and hospital inpatient admissions for pregnant Medicaid beneficiaries with and without SUDs for CY 2013 through CY 2017. Further, Hilltop analyzed the cost of births by mothers with and without OUDs and by kick payments for HealthChoice enrollees; and analyzed the cost of births by mothers with and without OUDs with 24 months of continuous payment history for CY 2015 and CY 2016.

Data Requests from External Researchers and Agencies

Hilltop fulfills requests for Medicaid data from external researchers and federal and state agencies for use in program planning, monitoring, and evaluation. Upon approval of a data request by the Department, Hilltop works with the researcher or agency representative to develop a detailed scope of work that is consistent with HIPAA regulations requiring covered entities to make reasonable efforts to ensure that the "minimum necessary" protected health information (PHI) is disclosed. The scope of work is included in the Institutional Review Board (IRB) submission to the Department (if IRB approval is required under federal guidelines), as well as the DUA. In FY 2019, Hilltop continued to use the new multi-party DUA template for data requests, developed in FY 2018 by the Department and UMBC to clearly specify approved uses of the data and ensure compliance with data security, management, and destruction requirements. If the data request is not a task included in Hilltop's Master Agreement with the Department, then Hilltop also develops a budget for the data request and arranges for payment from the requester.

In FY 2019, the Department and UMBC executed eight DUAs with external agencies, and Hilltop proceeded to fulfill these data requests. Data requests can vary from one-time extractions of summarized tabulations of Medicaid data to multiple extractions of individual-level claims and

encounters for a specified study population along with a comparison group extracted through propensity score matching. In some instances, Hilltop matches person-level Medicaid claims with person-level data from other sources or performs analytics for the data requester. Table 1 lists the data requests for which DUAs were executed in FY 2019.

Table 1. Data Requests

Requesting Organization	Description of Data Request
Abt Associates	Federal Section 811 Project Rental Assistance Program Evaluation: Medicaid and managed care enrollment, participant demographic data, claims, and encounter data from CY 2015 and CY 2016 for Medicaid participants living in Section 811 units and other HUD-funded housing programs and a comparison group
Baltimore Healthy Start, Inc. (BHS)	Evaluation of the cost effectiveness of the BHS infant mortality prevention program as a part of health care operations, comparing the cost of Medicaid services used by BHS clients to those in Baltimore City not using the program: Claims and encounters for mother-child pairs in the study group and mother-child pairs in the comparison group
Johns Hopkins University School of Medicine and Baltimore City Public Schools	Baltimore Healthy Schools: Evaluation of the effects of the school environment on student health: Claims and eligibility data for recipients enrolled in the Maryland Medicaid Program
Johns Hopkins University Bloomberg School of Public Health (Gaskins)	Assessing Maryland's Dental Health Services and Policy Options to Increase Access: Dental services provided under FFS payment systems and MCOs to estimate Medicaid utilization for dental services for children and adults during CY 2016 and CY 2017
University of Maryland Foundation	Prescription Opioid Exposure and Subsequent Dependence: Enrollment, pharmacy, medical, and dental service claims data of Medicaid participants aged 12-63 years
University of Maryland School of Social Work	Evaluation of Baltimore Child & Adolescent Crisis Response System (B-CARS): Data on Baltimore Medicaid-enrolled children using behavioral health services
University of Maryland School of Social Work	System of Care in Anne Arundel County: Data on Anne Arundel County Medicaid-enrolled children using behavioral health services

Data Management and Web-Accessible Databases

In its role as a business associate of the Department pursuant to the HIPAA Privacy Rule, Hilltop maintains Maryland Medicaid data and a number of other data sets to support policy analysis, performance evaluation, development of risk-adjusted payment methodologies, and capitation rate setting for managed care on behalf of the Department. Data requests ranging from ad hoc reports to long-term trend analyses can be processed promptly with Hilltop's sophisticated data management technology.

In FY 2019, Hilltop implemented business process improvements for responding to data requests from the Department more efficiently. After taking stock of which requests occurred with some regularity (monthly, quarterly, annually), Hilltop set up a centralized project repository with shared permissions. Hilltop created documentation for each recurring project, including instructions on how to 1) access the data, 2) change programs to account for when they are being run, and 3) review and present results. Hilltop also implemented the use of Git version-control software to better coordinate work among programmers. The resulting process and technology laid the groundwork for further improving development operations and automation in the coming year.

Data Sets

Maryland Medicaid Data: MMIS data include FFS claims (inpatient, outpatient, physician, MCO, capitation, and special services), MCO encounters (hospital, physician, lab, NF, etc.), eligibility, special program eligibility, and provider information for the Maryland Medicaid program. Hilltop receives MMIS data from the Department monthly, except for provider data, which it receives quarterly. Hilltop loads these data into analytic formats in its data repository for usage in web applications and operational reporting, as well as policy, financial, and evaluation studies. Included in the transmissions from the Department are FFS claims (medical, institutional, and pharmacy) and MMIS eligibility and encounter data. Hilltop's data repository appends and historically reconciles over 100 million Medicaid records per month. The largest data set in the repository—FFS—tallies over 480 million records, followed by the encounter database, which includes more than 441 million records; the annual eligibility database holds almost 350 million records. Hilltop processes over 1.2 billion records and 2,000 variables annually.

***LTSSMaryland*:** Built by Hilltop, FEi Systems, and the Department, *LTSSMaryland* is a person-centered information system supporting a broad array of community-based care functions. Business processes revolve around the main client record, which provides users with a detailed chronology of participant interactions. The system supports the use of the interRAI assessment and other tools to accommodate federal guidelines, allows unified and customized reports across

community-based programs, and provides increased support for person-centered care planning. The *LTSSMaryland* system supports several waivers and programs, including the CO, MDC, DDA, and BI Waivers; CFC, CPAS, ICS, and MFP programs; and reportable events (RE), quality survey, and nurse monitoring. The *LTSSMaryland* system also supports electronic billing and claims processing for attendant care environmental assessments (using the In-Home Supports Assurance System (ISAS)), support planner activities, and nurse monitoring activities. Hilltop receives a weekly SQL server database containing a full backup of *LTSSMaryland*. This database contains information on program eligibility and participation, health assessments, and plans of service for Maryland Medicaid LTSS recipients. Hilltop used data from *LTSSMaryland* in many of the analyses described in the Community First Choice, Home and Community-Based Services, and Long-Term Services and Supports sections of this report.

In FY 2019, Hilltop continued to support the Department's ongoing effort to develop and modify *LTSSMaryland*. Hilltop implemented several additional *LTSSMaryland* modules, including MDC phase II, DDA waivers, electronic billing for environmental assessments, provider portal modifications, nurse monitor phase II, concurrent enrollment, and self-direction data extract. Requirements gathering and design review continued for MDC phase II, REM, DDA billing, electronic billing for home-delivered meals, and waiver registry modifications. Hilltop continues to work with the Department to develop business processes, define system requirements, review use cases and report requirements, and assist with system trainings, including statewide trainings for MDC providers.

Minimum Data Set: Hilltop receives MDS data monthly and maintains the data for routine and incidental analyses to better understand the health status, health care usage, and health care costs of nursing home residents in Maryland. These data are routinely linked to Maryland Medicaid recipient data for analyses at the individual, aggregate individual, and facility levels. The MDS data are also the source of case-mix information (specifically, resource utilization groups, or RUGs) that are used to calculate Medicaid nursing home payments. The data, stored in raw and refined formats, include all MDS assessments for Maryland nursing home residents since the beginning of federal requirements for such assessments in October 1998. Separate resident and facility identification files are also included in the full MDS database.

Maryland Hospital Discharge Data: Hilltop receives data on hospital admissions and discharges semi-annually from the HSCRC. These data are used in HealthChoice rate setting and other analyses requested by the Department. Currently, Hilltop maintains inpatient and outpatient HSCRC data from CY 2006 to CY 2018.

Medicare Data: Hilltop maintains Medicare claims files for dual-eligible beneficiaries. These data are linked to Medicaid data at the individual level to facilitate analysis of this population. Hilltop hosts the Medicare data on behalf of the Department, which maintains a DUA with CMS. Additional files are requested annually. The data, stored in raw and refined formats, include all CMS Medicare Common Working File data files (i.e., inpatient, SNF, outpatient, carrier, durable medical equipment, home health, and hospice data) for roughly 160,000 Medicaid recipients with dual Medicare coverage during CY 2007 through CY 2016.

Medical Care Data Base: In FY 2017, the Department and MHCC executed a DUA that requires Hilltop to process and transmit to MHCC Medicaid data for the MCDB. The DUA also allows Hilltop to receive a copy of the commercial and Medicare data from the MCDB for use in carrying out Medicaid analyses for the Department. As required under the DUA, in FY 2019, Hilltop prepared quarterly reports to MHCC describing the Department's use of MCDB data. Hilltop also transferred Medicaid CY 2017 eligibility and pharmacy data to MHCC. The remaining institutional and professional files were sent in the first week of FY 2020. As of the end of FY 2019, MHCC had not yet made available the CY 2017 commercial data for download.

eMedicaid: The Department provides Hilltop with data from eMedicaid, a database developed and maintained by the Department that is accessible through a web-based portal and allows health care practitioners to enroll as a Medicaid provider, verify recipient eligibility, and obtain payment information. In addition, eMedicaid offers a case management tracking tool for providers participating in Maryland's Medicaid Health Homes. Hilltop uses eMedicaid data to identify dual-eligible Health Home participants' health care utilization patterns. In addition, Hilltop uses eMedicaid data to report program enrollment, participant characteristics, Health Home service delivery, and clinical outcomes for the Health Home evaluation reports.

Databases Developed and Maintained for the Department

Hilltop has developed several interactive websites and databases that it continues to maintain and update monthly for the Department.

Decision Support System: Hilltop continued to maintain the DSS for the Department. The DSS provides password-protected web-based access to 20 years of Maryland Medicaid data, including payment, eligibility, and service data delineated by recipient and provider. Users can query the DSS using both custom and standard reporting functionality that includes maps, charts, and multiple-year trends. Currently, approximately 40 Department staff are registered to use the DSS, and Hilltop adds new user IDs as needed. Hilltop continually makes improvements to the DSS and

provides technical assistance to Department staff that use the system. To ensure that users are effectively utilizing the DSS, Hilltop also offers in-person training courses to Department staff.

Master Analytic Database: In FY 2019, Hilltop continued the initiative it began in FY 2018 to upgrade the back end of the DSS with a high-performance data warehouse model. Hilltop began development of a multi-purpose SQL server database to house the back-end data for the next iteration of the DSS, called the DataPort. The database is updated monthly with Maryland Medicaid MMIS data. Hilltop tested several data transfer options to find the one that optimized speed and security. Currently, there are tables to support the eligibility and capitation sections of the DataPort, as well as lookup tables for formatting coded variables. When the database is updated each month, an extract-transform-load (ETL) process is run to apply modeling schemes and techniques that create database views. These views serve as the source data for the DataPort and are designed to minimize query time for users. The DataPort uses modeling techniques that enable a wide variety of data questions to be asked by users and includes a high-performant system with the capability to quickly respond to very fine-grained questions.

DataPort: In FY 2019 Hilltop developed and conducted a soft launch of the Maryland Medicaid DataPort. State Edition. The DataPort uses a Tableau® front end and gives authorized Department users additional data exploration tools that provide tiered levels of data granularity. The initial launch of the DataPort included five years of eligibility and capitation data. In addition, Hilltop developed and provided an extensive resources module in the DataPort that includes navigation tips, training manuals, Medicaid resources, FAQs, and a ZIP code/county locator tool. In FY 2020, Hilltop will continue to develop the DataPort, State Edition as well as begin development of the DataPort, Public Edition, which will eventually replace Maryland Medicaid eHealth Statistics.

Maryland Medicaid eHealth Statistics: Hilltop continued to maintain *Maryland Medicaid eHealth Statistics*, a public website that primarily provides data on Medicaid eligibility by age, coverage type, and MCO. This site provides researchers, community leaders, practitioners, and the public at large with ready access to up-to-date eligibility data.

Immunization Registry: Hilltop continued to prepare and import immunization data for Medicaid beneficiaries to the Maryland Immunization Registry. Hilltop collected data from various databases—including eligibility, claims, and provider files—to compile data on each Medicaid participant who had an immunization procedure during the period reported. The data provided demographic and other information on these individuals. Hilltop updates this database semi-annually. Hilltop also gave each MCO data about vaccination records for their Medicaid participants.

The Hilltop Institute

UMBC

Sondheim Hall, 3rd Floor
1000 Hilltop Circle
Baltimore, MD 21250
410-455-6854
www.hilltopinstitute.org