The Hilltop Institute

Maryland Department of Health Master Agreement Annual Report of Activities and Accomplishments FY 2018

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UMBC

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A Nationally Recognized Partnership

The Hilltop Institute at UMBC

The Hilltop Institute at the University of Maryland, Baltimore County (UMBC), currently in its 24th 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 will be 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 agency. This relationship is governed through an interagency agreement between UMBC (on behalf of Hilltop) and the Department's Office of Planning. 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, 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 individuals in Maryland who are eligible for both Medicare and Medicaid [dual-eligible beneficiaries]). 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) 2018, HealthChoice had nine participating managed care organizations (MCOs), served about 1.2 million beneficiaries, and paid $5.6 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 that 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 as 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 Pilot Program, and the Assistance in Community Integration Services Pilot Program. Hilltop prepares analyses of 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 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 persistent mental illness, serious emotional disturbance, and opioid SUD. Hilltop also provides the Department with analytic support related to implementation of the Maryland All-Payer Model and monitoring the effects on the Medicaid program. 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 and research and policy support to other divisions and entities of the Department (e.g., the Developmental Disabilities Administration, Behavioral Health Administration, Public Health Division, 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 Aging). 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 (the Center) 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, which was 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 HealthChoice providers. 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, Benefits Data Trust (BDT), and researchers from the Johns Hopkins University School of Nursing first examined 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 modeled the potential effect of program participation on nursing home admissions. In 2015 and 2016, Hilltop partnered with MHCC to analyze commercial claims in the Medical Care Data Base (MCDB)—Maryland's all-payer claims data base—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). 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 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 impacting 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 evaluation of the effectiveness of the Delaware Contraceptive Access Now (Del-CAN) program. Virginia Commonwealth University and Hilltop recently received a grant from the Robert Wood Johnson Foundation to examine Virginia's and Maryland's experience with §1115 Institutions for Mental Diseases (IMD) waivers recently approved by CMS that permit federal financial participation (FMAP) for residential treatment for Medicaid participants aged 21 to 64 with SUD.

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. 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. In 2016, AcademyHealth received funding from the Patient-Centered Outcomes Research Institute (PCORI) to convene SUPLN annual meetings and support an environmental scan of partnerships' research capabilities, data availability, and interest in collaborative, cross-state research. A second PCORI grant awarded in 2018 is supporting SUPLN convenings and research and dissemination activities. . Currently, Hilltop is participating in a pilot study with eight SUPLN states to produce a variety of opioid use disorder (OUD) treatment measures using a distributed research network (DRN) model. Each participating state is developing an analytic data set following a common data model and then running jointly developed SAS code on that data set to calculate population-based OUD measures that can be shared with the other states. The method will enable cross-state comparison of OUD measures without having to share protected health information (PHI) or execute data use agreements (DUAs). The project team hopes to recruit additional SUPLN states to participate and utilize the DRN model for other studies. Hilltop's executive director chairs the SUPLN steering committee, and the network has grown to include 23 state/university partnerships. The partnership between the Department and Hilltop is widely recognized as a model to which other states aspire.

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 2018. This annual report presents activities and accomplishments for FY 2018 (July 1, 2017, through June 30, 2018).

HealthChoice Program Support and Evaluation

In FY 2018, Hilltop continued to play a key role in supporting HealthChoice, Maryland's 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 the ***waiver evaluation report*** for calendar year (CY) 2012 through CY 2016. This report provided a brief overview of the program and recent program updates and then addressed the following evaluation topics: coverage and access to care, the extent to which HealthChoice provides a medical home and continuity of care, and the quality of care delivered to participants, including the use of dental, somatic, and behavioral health services. The report also included a section that covered vulnerable populations, such as children in foster care, pregnant women, persons with HIV/AIDS, the REM program, and access to care among racial/ethnic minorities. In addition, the report presented a section on the ACA Medicaid expansion population and its demographics, service utilization, and prevalence of mental health and SUD diagnoses during CYs 2014, 2015, and 2016, the first three years of the expansion.

For the evaluation report, Hilltop continued to perform in-depth analyses on such topics as enrollment trends and service utilization measures (e.g., ambulatory care and emergency department [ED] use among HealthChoice participants and provider network adequacy). Hilltop integrated results from other studies, such as the Consumer Assessment of Healthcare Providers and Systems (CAHPS®) surveys, and guided report design. These activities gave the evaluation increased depth and policy context and allowed the Department to better demonstrate the program's achievements.

Rare and Expensive Case Management: The REM program serves individuals with multiple and severe health care needs. In FY 2018, 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. This chart book was the first deliverable for the Department produced using Tableau, a business intelligence software that enables more advanced visual analytics.

Early Periodic Screening, Diagnosis, and Treatment: 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 corrective 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). Hilltop uses a program it developed to implement an enhanced CLR/Medicaid data-matching process, which 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. The results of the lead tests are then reported to the MCOs for follow-up of children with elevated blood lead levels. Hilltop also shared with the Department the annual county-based analysis of lead testing results for HealthChoice children aged 12 to 23 months and 24 to 35 months that was submitted to MDE.

CHIP Health Services Initiative Lead State Plan Amendment: In June 2017, CMS approved Maryland's application for a CHIP state plan amendment to implement two health services initiatives aimed at removing asthma and lead triggers within the home. These two initiatives are being developed by the Department in partnership with the Department of Housing and Community Development. Hilltop's role for the project is to develop finder files to target at-risk households. Hilltop reviewed a data flow document and the draft DUA between the Department and MDE to verify that Hilltop could meet the data-sharing obligations on behalf of the Department. Hilltop developed reporting templates for Program 1 (Lead) and Program 2 (Asthma/Lead home visiting). Hilltop conducted an analysis of children aged 0 through 18 years who received a lead test as reported to the CLR from October 2015 to October 2017. Hilltop then conducted an analysis of children enrolled in Medicaid aged 0 through 18 years—residing in Baltimore City or Baltimore, Charles, Dorchester, Frederick, Harford, Prince George's, St. Mary's, or Wicomico Counties—who either received a lead test as reported to the CLR or were identified as having an asthma claim or encounter in the nine counties between October 2015 and October 2017. Hilltop re-classified children into priority levels based on age and number of inpatient admissions and ED visits and 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.

Lead/Asthma Joint Chairmen's Report: To assist the Department in preparing a joint chairmen's report (JCR) to the Maryland General Assembly on reducing lead poisoning and the incidence of asthma, Hilltop calculated the number of unique providers who billed for onsite environmental lead inspection for enrolled children in CYs 2009 to 2015, a service that was added as a result of a 2009 state plan amendment. In addition, Hilltop conducted an analysis on the number of children

in HealthChoice for at least 320 days from the above-mentioned nine counties who were diagnosed with asthma or had an elevated blood lead level in 2016.

Value-Based Purchasing: The goal of Maryland's value-based purchasing 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 2018, Hilltop provided a summary of the technical specifications for the CY 2017 lead screening and ambulatory care VBP measures and prepared the HealthChoice VBP targets for CY 2018. Hilltop calculated the individual MCO performance scores for CY 2016, completed the final ambulatory care VBP measure for HealthChoice participants with disabilities for CY 2016 and compared the final CY 2015 and final CY 2016 results, and completed the preliminary ambulatory care measure for CY 2016 and compared the final CY 2016 results with the preliminary CY 2017 results. Hilltop also completed the final lead VBP measure for CY 2016 and the preliminary lead VBP measure for CY 2017, 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 preliminary analysis of its lead testing and ambulatory care visit VBP measures for CY 2017.

Managing-for-Results: In FY 2018, Hilltop prepared the CY 2016 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 who were enrolled in a HealthChoice MCO for 90 or more continuous days during CY 2016. Hilltop also prepared the asthma avoidable admissions measures for CY 2016 and provided estimates for FY 2017 to FY 2019 for the Cigarette Restitution Fund. In addition, Hilltop prepared the racial disparities MFR measures, calculating average annual growth for enrollment and ambulatory care visits by race/ethnicity for CY 2016 and estimates for CY 2017 through CY 2019. Hilltop analyzed the birth weight of newborns in the HealthChoice program and provided the percentages of total births of newborns with very low birth weights for CY 2016 and estimates for CYs 2017 to 2019. Hilltop also updated the Data Definitions and Control Procedures document, the Program Performance Discussion document, and the MFR Performance Measures spreadsheet to include the rates for avoidable hospital admissions for children aged 6 to 17 years and adults aged 18 to 64 years. 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, delineated by service, for FY 2010 through FY 2017 and projected numbers for FY 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. The annual report focused on identifying the percentage of participants who used services within the past calendar year, the ratio of service users to participants, the distribution of diagnoses, diagnoses per claim, and cohorts by risk-adjusted category assignments. The report also compared encounters for specialized AIDS services with encounters in specific AIDS diagnostic categories. In FY 2018, Hilltop produced an encounter data validation report on MCO encounters for CY 2016. In addition, Hilltop provided Qlarant with eight statistically significant random samples of HealthChoice MCO encounter records from the hospital inpatient, outpatient, and physician services that occurred in CY 2016 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) 2018 specifications of HealthChoice-eligible recipients for the CAHPS® health plan survey. HealthcareData Company (HDC), an MDH vendor contracted to review and certify that Hilltop's SAS code meets NCQA requirements, audited source code and final sample frames. After receiving HDC approval, Hilltop transmitted final adult and child sample frames to the Department.

Shadow Pricing: The HealthChoice MCOs are not required to report the actual payment amounts for services when submitting their encounter data to the Department. However, the Department often has the need to estimate the costs of services (e.g., reporting MCO data to MHCC for the MCDB). To support the Department in this effort, 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 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 6 percent discount.

Primary Care Provider Utilization: In FY 2018, 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. The MCOs provided this information to Hilltop on a quarterly basis for each month in CY 2016. Hilltop

analyzed the data and calculated the percentage of HealthChoice participants with a visit with any PCP in their MCO's network and the number of PCPs with 2,000+ and 10,000+ HealthChoice participants assigned to them. Hilltop also identified the PCP provider types that participants visited outside of their assigned PCP.

Provider Accessibility: Hilltop compiled a list of providers who had discrepancies with their directory listing by MCO, including the specific discrepancies noted between the online directory and the provider's response for its name and each component of its address.

HEDIS Measure Eligibility: To help the Department complete its quality reporting to CMS for CY 2016, Hilltop calculated the number of MCO participants who meet eligibility requirements for the HEDIS emergency department utilization (EDU) and children and adolescents' access to primary care practitioners (CAP) measures. Hilltop also calculated the number of MCO participants eligible for the HEDIS ambulatory care (AMB) measure, delineated by age and gender for CY 2016.

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-care visit services in CY 2016 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 (any period of enrollment and 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 (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 (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 (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 12 to 21 years (any period of enrollment and at least 320 days of enrollment in the calendar year) who had a well-care visit.

MCO Application Review: Hilltop continued the review of the application from Aetna seeking approval to join the HealthChoice program. Hilltop updated and incorporated all reviewers' comments in the "Review of Elements" document; conducted legal research and provided consultation to the Department on certain elements; and participated in the onsite review. The Department approved the application.

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: (1) Assistance in Community Integration Services (ACIS) for high-risk, high-utilizing Medicaid participants who are either transitioning to the community from an institution or at high risk of institutional placement; and (2) Evidence-Based Home-Visiting Services (HVS) for high-risk pregnant women and 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 2018, Hilltop continued to provide consultation and support for program development and began the evaluation process for both programs. In collaboration with the Department, Hilltop developed DUAs with all participating pilots for both programs.

Assistance in Community Integration Services: Hilltop worked with the Department to develop a scope of work for the analyses it would perform for this project and provided a list of data elements; developed a template and instructions to record each service event occurring for each person enrolled in ACIS; and provided training on data collection and transmission to lead and participating entities.

Evidence-Based Home-Visiting Services: Hilltop worked with the Department to develop evaluation measures, a data workflow document, a data collection template, and data collection instructions for the HVS pilot sites. Hilltop also conducted data collection training for the pilots at their kick-off meetings and submitted the first quarterly report for the HVS pilot.

Family Planning: In addition to the annual HealthChoice evaluation, the Department is required to provide annual reports to CMS on other aspects of the program. To assist, 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 200 percent of the FPL who are not otherwise eligible for Medicaid or CHIP—during FY 2016 and determined the proportion of FP participants who gave birth. Hilltop also determined the average total cost for a Medicaid-funded birth across all coverage groups in FY 2016.

Pregnant Women: Hilltop calculated the number of women enrolled in Medicaid who were pregnant, as well as the number of infants and children aged 0 to 4 years in CY 2013 through CY 2016.

Tax Forms: In FY 2018, Hilltop added a MAGI indicator variable to the CY 2017 1095-B tax form data.

Dental Services

Dental JCR: In FY 2018, 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 2015. Hilltop used the following measures:

- The number and percentage of children aged 0 to 20 years who had a dental visit while enrolled in Medicaid for any period in the calendar year, by age group
- The number and percentage of children aged 0 to 20 years who had a preventive/diagnostic dental visit followed by a restorative dental visit while enrolled in Medicaid for any period in the calendar year
- The number and percentage of children aged 4 to 20 years who had a dental visit while enrolled in Medicaid for 320 or more days in the calendar year, by type of service and age group
- The number and percentage of children aged 4 to 20 years who had a dental visit while enrolled in Medicaid for 320 or more days in the calendar year, by region
- The number and percentage of children aged 0 to 20 years who had an ED visit with any dental diagnosis or procedure made while enrolled in Medicaid for any period in the calendar
- The number and percentage of pregnant women aged 14 years and older who had a dental visit while enrolled in Medicaid for any period in the calendar year
- The number and percentage of pregnant women aged 21 years and older who had a dental visit while enrolled in Medicaid for 90 days in the calendar year
- The number and percentage of non-pregnant adults aged 21 to 64 years who had a dental visit while enrolled in HealthChoice for 90 days in the calendar year
- The number of dentists participating in Medicaid who billed one or more services, by region
- The number of dentists participating in Medicaid who billed $10,000 or more for services, by region
- The number and percentage of Medicaid participants aged 0 to 64 who had a dental-related ED visit while enrolled in Medicaid for any period in the calendar year

Hilltop also conducted a follow-up analysis to calculate number and percentage of Medicaid participants aged 0 to 64 years with dental-related ED visits.

Expanding Dental Services to Adults: Hilltop conducted a number of analyses to assist the Department in estimating the impact of expanding dental services to adults. Hilltop updated cost estimates it provided in FY 2017 covering services at the rates of four example states.

Healthy Smiles: To assist the Department in responding to a request about the effectiveness of the Healthy Smiles program in Harford and Cecil Counties, Hilltop calculated the number of children with any period of Medicaid enrollment with at least one dental visit for each county, the number of children enrolled in Medicaid for at least 320 days with at least one dental visit, and the number of Medicaid providers in these counties who billed for at least one dental service during the calendar year for CYs 2012 through 2016.

Medicaid Rate Setting

In FY 2018, the state of Maryland paid $5.6 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 for All-Inclusive Care for the Elderly (PACE).

HealthChoice Rate Setting and Financial Analysis: In FY 2018, 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 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. In FY 2018, Hilltop worked extensively with Optumas to complete and certify CY 2018 HealthChoice capitation rates and initiate development of CY 2019 capitation rates.

In fall 2017, UMBC's procurement office issued a request for proposals (RFP) for HealthChoice actuarial services for CY 2020 through CY 2024. UMBC and Department representatives reviewed responses and interviewed applicants in spring 2018. UMBC again awarded the contract (which begins on March 1, 2019) to Optumas.

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 2017, Hilltop analyzed specific variances in membership, premium income, and cost of medical care during CYs 2014 and 2015 and prepared a complete financial report package that analyzed MCO underwriting performance.

Report on Managed Care Rate Setting: A 2017 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, UMBC managed the procurement process and study. Through a competitive procurement process, UMBC selected the consulting firm Milliman, Inc. to conduct the study in collaboration with Mannatt Health Strategies. Hilltop provided oversight for the study and coordinated stakeholder interviews on behalf of the consulting firms. The study was completed in May 2018.

Nursing Home and PACE Rate Setting: In FY 2018, 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 2018, 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 All-Payer Model, Health Homes, CFC, and several other initiatives.

Medicaid Expansion

In FY 2018, Hilltop continued to support the Department in monitoring the 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 federal poverty level (FPL), and Maryland chose to expand Medicaid.

Reporting on the Medicaid Population: In FY 2018, 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 between January 1, 2015, and September 30, 2017. These data and accompanying data dictionaries were sent in three transmissions during the year. In addition, Hilltop re-sent eligibility files covering Medicaid/MCO eligibility spanning July 1, 2015, to June 30, 2016, to replace files that CRISP had purged but still needed. The HSCRC uses the eligibility information to conduct hospital utilization analyses required for rate setting.

Health Insurance Coverage Protection Commission: To assist the Department in providing staff support to this Commission, Hilltop provided the Department with an analysis of the Medicaid expansion, including an overview, demographics of the expansion population, service utilization information, and the potential impact of proposed senate bills (SBs) and house bills (HBs). In addition, Hilltop reviewed and commented on the draft JCR for accuracy.

Maryland All-Payer 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 is transforming 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 FY 2018, Hilltop continued to provide significant support and conducted a number of analyses to assist the Department in implementing the Model.

Total Cost of Care: As part of the requirements under the state's All-Payer Model Agreement with CMS, the HSCRC is required to report on and monitor Total Cost of Care (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 the Medicaid TCOC reports for CY 2013 through CY 2015. 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 conducted a number of analyses to assist the Department and the HSCRC in fulfilling the HSCRC's obligation to annually report on the performance of the All-Payer Model to CMS. Hilltop provided consultation on reporting on Medicaid enrollment. Hilltop provided monthly FFS and MCO Medicaid enrollment for January to August 2017; total monthly Medicaid enrollment for CY 2016 and FY 2016, delineated by dual-eligibility status; and total monthly Medicaid enrollment for January through November 2017. Hilltop reviewed and provided consultation on HSCRC's report for the purpose of clarifying language about the FFS non-dual population, data calculations, and expenditures, as well as verifying all of the data calculations.

All-Payer 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 All-Payer 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.

Garrett County Analysis: To inform the Department and the HSCRC in their decision-making about whether to include a geographic indicator in determining the TCOC, Hilltop developed a geographic TCOC approach to analyze Garrett County. Hilltop identified residents of Garrett County who were enrolled in Medicaid and summarized their service use and total cost for FY 2016.

Primary Service Area Plus Analysis: As a follow-up to the Garrett County analysis, the HSCRC requested the Department to calculate per-capita Medicaid growth, delineated by primary service area plus (PSAP). PSAP is a beneficiary-to-hospital attribution methodology used by the HSCRC. In response, Hilltop calculated the proportion of Medicaid costs attributed to each hospital based on the participant's ZIP code and coverage type using HSCRC PSAP values for CY 2013, CY 2014, and CY 2016.

All-Payer Hospital System Modernization Workgroups: In FY 2018, Hilltop continued to provide consultation and support to the Medicaid representative of the HSCRC Performance Measurement, Payment Models, and TCOC Workgroups by attending meetings and answering various questions about the Medicaid data.

Including Dual-Eligible Beneficiaries in the All-Payer Model: In FY 2016, the Department received a second CMS SIM design award to develop an integrated delivery network (IDN) for Maryland's dual-eligible beneficiaries that aligns with the All-Payer Model. Using SIM grant funds carried over from the prior fiscal year, in FY 2017, Hilltop collaborated with the Department, EBG Advisors (the Department's contractor), and Optumas to develop a conceptual model for a an ACO for dual-eligible beneficiaries (D-ACO). Optumas had previously been engaged by Hilltop to develop baseline cost estimates under Maryland's first SIM design award. In FY 2018, Hilltop continued to conduct analyses on this population. Hilltop calculated the number of dual-eligible beneficiaries who received a service by a provider currently eligible for the proposed Maryland Primary Care Program (MDPCP), delineated by full and partial eligibility status and by county in CY 2015. MDPCP, a voluntary program open to all qualifying Maryland PCPs, provides funding and support for the delivery of advanced primary care throughout the state. To assist the Department and EBG Advisors in more effectively developing a set of policy options for targeting partial dual-eligible beneficiaries and other populations likely to become dually eligible, Hilltop provided some basic data on these populations, including the total number of partial dual-eligible beneficiaries and the number enrolled in a Medicare Advantage plan for CY 2009 to CY 2017, delineated by Medicaid eligibility group, as well as demographic information available on those two populations. Hilltop calculated the Medicaid expenditures for dual-eligible beneficiaries not participating in the developmental disabilities waiver (non-DD) for CY 2014 to CY 2016, delineated by service type; expenditures and per-member-per-month amounts, delineated by provider service area; and expenditures delineated by provider service area and service type. To assist the contractor in preparing a white paper describing the dual-eligible population, Hilltop 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.*

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 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 opioid SUDs.

Health Home Program Evaluation: In FY 2018, Hilltop continued to conduct several analyses to evaluate and support the Maryland Health Home program. Hilltop produced a quarterly report for the program—encompassing quarters 1 through 13—that measured participant characteristics, health home services, and health care utilization and quality. Hilltop also produced 42 provider-specific reports for quarters 1 through 13, with each provider's data presented to them individually. In FY 2018, in order to understand the current evidence of effectiveness of Health Home programs and serve as a starting point for revisions to the draft evaluation report for Maryland, Hilltop conducted an environmental scan of other states' Health Home evaluations. Hilltop reviewed the evaluations of states with an approved State Plan Amendment to identify interim reports describing the implementation and outcomes of their Health Homes and produced a report and a matrix that compared the findings. Hilltop reviewed the methodology it previously used to select the evaluation cohort and made suggestions for revisions in order to maximize the study sample size and also to more accurately reflect post-intervention outcomes. Hilltop then produced a draft annual report that updated the 2015 JCR on Patient Outcomes for Participants in Health Homes and the 2016 annual report and described the outcomes of participants in the Maryland Health Home program in 2017.

Hilltop also produced a report on the numbers and percentages of Health Home participants who received zero, one, or two or more services from October 2013 through December 2016, delineated by month, and the frequency and percentage of Health Home participants, delineated by program type, provider, and month as reported in *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.

Health Home participants: In order to assist the Department in planning for integrating Health Home providers into MDPCP, Hilltop provided a demographic description of the participant population, including the number and percentage of participants delineated by age group, race/ethnicity, gender, region, ACG comorbidity level, Health Home provider type, and dual Medicare/Medicaid eligibility. Hilltop then calculated the number and percentage of participants who were enrolled in psychiatric rehabilitation programs, mobile treatment services, and opioid treatment programs, delineated by dual-eligibility status.

Community Health Home Monitoring: At the request of the Department, Hilltop provided Medicaid claims, MCO encounter, and MMIS eligibility data and shadow-priced encounters monthly to Relias Learning (formerly Care Management Technologies) for Health Home participants enrolled in programs administered by the 13 affiliated providers of Way Station, a

private, non-profit behavioral health organization. Relias uses the Medicaid data to populate ProAct, a tool that supports clinical and financial decision making by behavioral health providers.

Health Home Core Measures: CMS requires states to report on the outcomes of Health Homes through a reporting system called MACPro. These include ambulatory care/ED visits, inpatient utilization, prevention quality chronic condition composite, nursing facility utilization, adult body mass index, plan all-cause readmission rate, initiation and engagement of alcohol and other drug dependence treatment, and follow-up after hospitalization for mental illness. Hilltop analyzed the data and produced these measures for the Department.

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 level of care. 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 2018, Hilltop conducted the following analyses to support CFC operation and monitoring by the Department.

Services Utilization and Cost Analyses: Hilltop conducted a number of analyses on service utilization and costs for the CFC population. To assist the Department in determining whether to revise its payment methodology for supports planning (SP) services, Hilltop analyzed the costs of those services. Hilltop calculated the per member per month (PMPM) cost for SP services for an enrolled participant (overall and then by private agency or Area Agency on Aging (AAA)), the PMPM cost for SP services for an applicant delineated by procedure code (overall and then by private agency or AAA), and the total cost of SP services prior to enrollment (by program). Hilltop calculated the length of time from participants' assignment of SP services by the SP agency to program enrollment, delineated by program. Hilltop also reviewed the two databases used for this analysis (*LTSSMaryland* and MMIS), found a number of anomalies, and helped the Department correct them. Hilltop analyzed the plan of service (POS) approval process to determine the amount of time it took to complete each portion of the process and produced quarterly reports. In addition, Hilltop calculated the number of individuals who utilized SP and transition services in CY 2017, as well as the total and PMPM costs for those services and the number of service months, delineated by individual service. To assist the Department in responding to the Kaiser Family Foundation Annual Home and Community-Based Services (HCBS) Survey, Hilltop calculated the

number of unduplicated CFC participants who used personal care provided through Community Personal Assistance Services and expenditures for FY 2014 through FY 2016.

CFC Population: Hilltop conducted a number of analyses to describe the CFC population. Using both *LTSSMaryland* data and data from the Office of Health Care Quality, Hilltop identified the CFC participants who were residing in an assisted living facility (ALF). Hilltop calculated the number of individuals who were enrolled in Community Options (CO)/Increased Community Services (ICS) and/or used a CFC personal assistance service in July 2017 and, using a 5 percent per annum growth rate, estimated what the July census for the next six years would be. In addition, Hilltop analyzed participant quality surveys and produced weekly reports for the Department identifying participants who were having trouble with activities of daily living (ADLs), so that the Department could follow up with them to ensure their needs were being met. Hilltop also identified enrolled or appeal-pending individuals—with an approved POS that included personal assistance services—whose current addresses matched at least one other qualifying individual's current address. Hilltop calculated the number of individuals who enrolled in CFC after they received a Maryland Access Point/Center for Independent Living screening or options counseling in FY 2014 through FY 2018.

Flexible Budgeting Methodology: Hilltop continued to assist the Department in expanding its flexible budgeting methodology for CFC in FY 2018. Hilltop provided consultation on the development of a budget algorithm, testing deviations within budget groups to determine whether this would give an indication of the best predictors of flexible budget amounts.

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 in 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 comport with the HCBS settings 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. In FY 2018, Hilltop performed ongoing tasks to assist the Department in its efforts to comply with the HCBS Community Settings Final Rule.

The Department began conducting site visits to ALF, medical day care (MDC), and senior center plus (SCP) providers for the purpose of further verifying compliance with the Final Rule. To assist the Department in this process, Hilltop conducted a number of analyses on these providers.

Assisted Living Facility Providers: Hilltop identified all the ALFs in Maryland and reconciled its list with the Department's; mapped the ALFs in Maryland delineated by ZIP code and county, calculated the number of ALFs in each county, and displayed the density of nursing homes across the state. Hilltop also mapped the ALFs using Google Maps to assist the Department's site visitors in locating them. In collaboration with the Department, Hilltop developed Assisted Living Facility Residential Agreement and Site Visit Checklists in Qualtrics for ALF providers to complete. Then Hilltop identified the providers who had received a 100 percent compliance rating on their checklists.

Medical Day Care Providers: Hilltop collaborated with the Department to develop a site visit checklist for MDC providers and developed a crosswalk of the checklist with the Final Rule to ensure that the checklist covered all Final Rule compliance requirements. Hilltop analyzed the results and added a cross tab table.

Senior Center Plus: Hilltop collaborated with the Department to develop a Senior Center Plus site visit checklist for compliance with the Final Rule.

Other Support

Operational and Evaluative Support for Eligibility Processes: As required by the ACA, in FY 2015, 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, MHBE's Maryland Health Connection. Eligibility must be re-determined every 12 months. To continue to support eligibility operations and evaluation, Hilltop reported on the number of people who were enrolled in MAGI coverage groups in each month of CY 2016 and CY 2017. Hilltop also reported on the average number of monthly redeterminations, renewals, and net lost enrollment and for those who lost coverage; the number who come back within 1 to 2 months, 3 to 4 months, and 5 to 6 months; and those who do not become re-eligible within 6 months and 12 months. In response to several federal proposals, Hilltop also estimated the amount of MCO payments that would be averted in FY 2018 and FY 2019 if the Department were to redetermine eligibility every six months instead of every 12 months.

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

Medicaid participants who filed a tax return. During the last fiscal year, Hilltop developed person-level data sets containing participants enrolled in CY 2014 and 2015. The Comptroller provided back to Medicaid the number of participants who filed a tax return each year by age group, coverage group, and dual-eligibility status. Hilltop appended the total number of Medicaid participants in each of the categories in order to calculate the percentage of participants aged 19 years and older who filed a Maryland state tax return. This process was repeated to include participants enrolled during CY 2016. In addition to the data set, Hilltop also provided a data dictionary.

Financial Analysis

In FY 2018, Hilltop continued to provide the Department with consultation and financial analysis related to Medicaid provider reimbursement rates and physician payments, and continued the process to update the fees paid to trauma centers by the Trauma and Emergency Medical Fund.

Reimbursement Rates Fairness Act: In November 2017, on behalf of the Department, Hilltop completed the seventeenth annual report examining physician fees paid by Maryland Medicaid and CHIP. Pursuant to 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 directed the Department to submit this annual report to the Governor and various state House and Senate committees. The report includes a review of the reimbursement rates paid to providers under the federal Medicare fee schedule, a comparison of those rates to the FFS rates paid to similar providers for the same services under the Medicaid program, and the rates paid to MCO providers for the same services. The report also includes a discussion of whether the FFS rates and MCO provider rates will exceed the rates paid under the Medicare fee schedule, an analysis of other states' rates compared to Maryland's, the schedule for raising rates, and an analysis of the estimated cost of implementing these changes.

Physician Fees: In addition to the analyses described above, in FY 2018, Hilltop consulted with and provided technical assistance to the Department regarding increasing physician fees. Hilltop estimated the percentage of Medicaid fees to Medicare fees for all procedures and identified and calculated the cost of procedures that had higher Medicaid fees than Medicare fees. Hilltop applied the federal upper payment limit (UPL) policy—which prohibits federal matching funds for Medicaid payments in excess of what would have been paid under Medicare payment principles—to a scenario of the state increasing physician fees to 115 percent of Medicare; Hilltop then estimated the total cost and the state's cost of such action for 2019.

Evaluation and Management Procedures: In consultation with the Department, Hilltop continued to estimate and re-estimate the costs of evaluation and management (E&M) procedures throughout the year, adding and subtracting various factors. Such factors included using the 2018 Medicare fees to estimate costs of fee changes for E&M procedures. Hilltop estimated the costs of increasing fees for E&M procedures to 92 percent; 95 percent, and 100 percent; and then to 94 percent of Medicare fees. Cost estimates were delineated by FFS, MCO, and total state costs. Hilltop also estimated the cost of setting laboratory procedures at 79.5 percent of Medicare fees. In addition, Hilltop calculated and provided the FY 2019 reimbursement rates for E&M procedures to be uploaded to MMIS, as well as the fee schedule to be sent to the MCOs.

Reconciliation of Medicaid Payments for Trauma Procedures: In 2003, SB 479 (Chapter 385 of the Acts of 2003) created a Trauma and Emergency Medical Fund financed by motor vehicle registration surcharges. Based on this law, the Medicaid program is required to pay physicians 100 percent of the Medicare facility rates when they provide trauma care to Medicaid participants. In FY 2017, some Medicaid trauma providers asserted that they were not being paid at the correct Medicare facility rate for trauma care and asked the Department to pay the differential between what they were paid and the Medicare facility fee payments. The Department evaluated the issue and determined that the MMIS U1 modifier factors that were used to determine the Medicare facility fee for trauma procedures had not been updated for July 1, 2015, through December 31, 2016. The Department updated the factors effective January 1, 2017, and tasked Hilltop to calculate the differential amounts between what was paid for each trauma claim and what should have been paid, and to determine the amounts of the supplemental payments owed to trauma providers.

In FY 2017, Hilltop analyzed the number of physician encounters with a trauma diagnosis from July 2010 to December 2015, delineated by MCO and type of service performed in the trauma center. Subsequently, Hilltop calculated the payment differentials for FFS trauma claims to determine over- and underpayments and provided a list of variables to be used by the HealthChoice MCOs to report their trauma claims. Hilltop continued its work on this project in FY 2018. Hilltop calculated the FY 2016 correct payment amounts for trauma procedures and estimated the cost to the state of the payment differential. Hilltop then analyzed the data by provider and calculated the amount owed to each provider. Hilltop identified those 2017 and 2018 trauma procedures that were common in both Medicare and Medicaid fee schedules, compared the Medicare and Medicaid facility and non-facility fees, and calculated the differentials. Hilltop also calculated the total amount of the underpayments to providers for FY 2016 and FY 2017.

Other Analyses and Technical Support

In FY 2018, 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, and long-term services and supports (LTSS). Hilltop also provided data analytics for a grant application submitted by the Department to a federal agency.

Coverage and Health Services Utilization

MCO Enrollment: To assist the Department with a request from the Maryland General Assembly, Hilltop calculated the number of Medicaid participants who were enrolled in an MCO in CY 2016, delineated by month, MCO, and coverage category. Hilltop conducted a similar analysis for a request from a consultancy firm.

Medicaid Enrollment: To assist with a request from the Medicaid Director, Hilltop calculated the number and percentage of Medicaid participants in September 2017, delineated by race/ethnicity. To assist with a request from the Department's Deputy Director of Communications, Hilltop calculated the number of Medicaid participants for each month of FY 2013 through FY 2017. To assist the Department with a request from a Departmental business consultant, Hilltop calculated the number of Medicaid participants at three points in time (March 2018, January 2018, and July 2017), delineated by coverage group. To help the Department fulfill a Freedom of Information Act request, Hilltop calculated the total number of non-disabled Medicaid participants aged 19 to 64 years and the total number of Medicaid participants classified as newly eligible under the ACA in December 2017.

Oral Contraceptives: To support a fiscal note, Hilltop conducted an analysis of the number of Medicaid participants who received a prescription for an oral contraceptive during CYs 2016 and 2017. Hilltop also calculated the cost per user per prescription and the total cost of oral contraceptive prescriptions during this time period. Hilltop then identified the number and percentage of participants with 1) at least a two-month supply of oral contraceptives in CY 2016, delineated by coverage period, 2) an oral contraceptive prescription in CY 2016 who regained eligibility following at least a one-month gap in coverage, and 3) an oral contraceptive prescription in CY 2016 who regained eligibility following at least a one-day gap in coverage.

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 FFY 2016.

Annual Abortion Report: To assist the Department in providing information for the Department of Legislative Services annual abortion report, Hilltop conducted an analysis of abortions provided to Medicaid participants in FY 2015 through FY 2017 and calculated the number and total costs of these services. Hilltop also performed a subsequent analysis to calculate the age of Medicaid participants who had an abortion during FY 2017.

Access Monitoring Review Plan: The Social Security Act requires state Medicaid programs to assure that payments to providers are "sufficient to enlist enough providers so that care and services are available under the plan at least to the same extent that such care and services are available to the general population in the general area." CMS refers to this standard as the "access requirement." In November 2015, CMS issued a Final Rule on the *Medicaid Program: Methods for Assuring Access to Covered Medicaid Services* that requires states to develop an access monitoring review plan for services provided through Medicaid FFS delivery systems. In FY 2017, Hilltop worked with the Department to develop the state's plan, conducting the analyses and drafting the report required for the state's first access monitoring review plan submission. In November 2017, CMS issued a state Medicaid director letter providing guidance on the application of the Medicaid FFS access monitoring rule, which aimed to clarify how CMS intended to interpret the rule's requirements for reduced or restructured rates that may result in diminished access. Hilltop reviewed the letter and provided a summary of its key points and implications.

Hepatitis: Hilltop calculated the number of Medicaid participants who received a hepatitis C virus (HCV) or hepatitis B virus (HBV) diagnosis, as well as the number of participants who received treatment for these conditions in CY 2016. Hilltop conducted a separate analysis of the HCV data and calculated the number of "baby boomers" (those born between 1945 and 1965) with an HVC or HVB diagnosis in CY 2016, delineated by sex, age group, race/ethnicity, and county of residence.

Colorectal Cancer Screening: Hilltop provided cancer screening data to the Maryland Colorectal Cancer Control Program (CRCCP) at the Center for Cancer Prevention and Control. The purpose of providing these data was to facilitate the calculation of colorectal cancer (CRC) screening rates in the Medicaid population in FY 2017, as well as to indicate whether three different CRC screening measures (fecal occult blood test, flexible sigmoidoscopy, and colonoscopy) and the overall measure are current. Hilltop also provided demographic, eligibility, and MCO information for each individual in the cohort.

Provider Participation

Electronic Health Record Incentive Program: Hilltop calculated the percentage of Medicaid outpatient ED encounters for hospitals in Maryland 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 (EHR) payments for a hospital that newly converted to acute care services and became eligible to receive incentives. This requires first calculating the number of inpatient days while breaking out the total Medicaid days, days for dual eligibles, and Medicaid days excluding CHIP and dual eligible days, and then projecting future patient load. This work helped the Department determine whether hospitals were qualified to receive EHR incentive payments.

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

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, the federal Minimum Data Set (MDS), and *LTSSMaryland*—the state's integrated LTSS tracking system—including interRAI assessment data and plans of service.

Nursing Facilities: In FY 2018, Hilltop continued its work with the Department on the use of nursing facility (NF) services. Hilltop determined the predictive value of questions present on the MDS assessment for subsequent hospitalization during a Medicare Skilled Nursing Facility (SNF) stay, and determined the predictive value of questions present on the screening tool of subsequent nursing facility admission. Hilltop also calculated the number of new NF admissions in CY 2011 to CY 2016 with Preadmission Screening and Resident Review (PASRR) responses.

Autism Waiver Reporting: In FY 2018, 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.

CO Waiver Reporting: Hilltop gave the Department a detailed status of Hilltop's reporting on each waiver assurance measure. Hilltop estimated the costs of the utilization of personal emergency response systems (PERS), PERS monitoring, environmental assessments and adaptations, technology, and items that substitute for human assistance if these services had been available to CO ALF residents in FY 2016. Hilltop also 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 a level of care determination in the prior year, and amount of POS dollars claimed).

CMS Benchmarks: In FY 2018, 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. They 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).

LTSS Chart Books: In FY 2018, Hilltop produced three 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 encompassed FY 2012 through FY 2016 and included ***Volume 2: The Brain Injury Waiver, Volume 3: The Medical Day Care Waiver,*** and ***Volume 4: The Model Waiver***. Hilltop also produced a chart book that analyzed national trends in LTSS spending, as well as an addendum to the HCBS chart book.

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 January 2016 through August 2017. In a follow-up analysis, Hilltop calculated the number of participants who used a service, the number of service units used, and the total and per-person expenditures for each HCB service in FY 2014 through August of FY 2018. For the CO, MDC, ICS, and CFC-only populations, Hilltop calculated the monthly number of users, total expenditures, and per-person expenditures for each service further delineated by received service, received service outside of span, and received service during span, for January 2016 through August 2017. Hilltop calculated the number of users, units of service, and total and per-person expenditures of HCBS and personal care services only for FY 2015 through FY 2018.

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, 2018, for MFP and the CO and Autism Waivers.

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, Medical Day Care (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 length of stay of waiver coverage by level of care, and the total days of waiver coverage in FY 2016. In a follow-up, Hilltop provided the client IDs for one category and added a report on the quality survey measure. In addition, Hilltop calculated the number of full and partial MFP participants in FY 2016, delineated by waiver.

Standardized Assessment Tool Studies: In FY 2018, Hilltop continued to conduct analyses using data from the interRAI assessment tool to help the Department monitor agency operations. Hilltop reviewed the data, found that some assessments entered into the database had post-dated assessment reference dates, and flagged these assessments for the Department's review. Hilltop identified participants with a significant change in interRAI assessments but no subsequent POS revisions.

Plans of Service: Hilltop produced quarterly reports calculating the amount of time from the first POS submission to the Department made by supports planners until the final decision on the POS is made. Hilltop also identified the number of urgent POS requests to determine the percentage that—after review—remained urgent and the percentage that were re-prioritized as normal.

LTSS Enrollment Reports: In FY 2018, 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 that 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 ran monthly reports on clients of one provider under a corrective action plan, which required monthly monitoring. Hilltop also modified the methodology to allow the Department to receive reports that better captured every newly completed MFP questionnaire. Hilltop assisted the Department in reporting on MFP transitions by identifying all activities related to housing assessments and applications for this population.

State Disabilities Implementation Plan: To assist the Department in fulfilling its responsibilities for the State Disabilities Implementation Plan, Hilltop calculated the number of individuals in the LTSS population served by Medicaid in any setting, the number served in community-based settings, the number enrolled in CFC, and the number enrolled in the CO Waiver for FY 2017.

Experience of Care Survey: Hilltop analyzed the results of the Experience of Care Survey using the CAHPS® SAS analysis program. This included cleaning data obtained from the survey and

assessing responses to develop case-mix-adjusted composite scores gauging recipient experiences with their services. Hilltop also provided consultation to the Department on methodology and interpretation of results and conducted further analysis on specific questions.

MD PROMISE: Hilltop provided data to the Department on participants in the MD PROMISE (Promoting the Readiness of Minors in Supplemental Security Income) program—a national program that operates in Maryland and targets youth aged 14 to 16 years receiving Supplemental Security Income (SSI) benefits and their family members, and helps the youth find employment. Hilltop matched data on Promise participants with Medicaid data to identify those participants who were receiving Medicaid. Also at the request of the Department, Hilltop provided consultation to the program evaluators.

Rental Assistance: To assist the Department in responding to a request from the Maryland Department of Disabilities, Hilltop identified the number of Medicaid participants in Maryland receiving rental assistance through the U.S. Department of Housing's 811 Project Rental Assistance Program.

Medicaid Eligibility by Acute Event: To assist the Department in responding to a request from the Maryland Department of Aging, Hilltop determined the number of individuals aged 65 and older who experienced an acute health care event that resulted in their eligibility for Medicaid coverage. Hilltop also assisted with a follow-up request by providing consultation about what kinds of questions could be answered using available data sources.

Private Duty Nursing: To assist the Department in analyzing the fiscal impact of adding private duty nursing to the Medicaid state plan, Hilltop calculated the number of individuals in nursing homes, individuals in nursing homes on ventilators, and average nursing home costs in FY 2011, as well as the number of individuals who received state plan personal care services at level 2 or higher in FY 2012. Hilltop also calculated the number of NF residents who contributed toward their cost of care.

Denials and Appeals: Hilltop analyzed denials for various waiver services to determine how many were due to higher than allowed income. Hilltop also calculated the length of time that a group of appellants had been participating in Medicaid, delineated by time span and special program code.

Participants in Nursing Facilities: To assist the Department in responding to requests from housing authorities for information they needed to report to the Department of Housing and Urban Development (HUD), Hilltop calculated the number of Medicaid participants aged 18 to 62 years who resided in nursing homes in January 2018, delineated by county.

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 shifts to and from utilization of LPN services of other home health care services.

SB 206: To assist the Department in preparing a fiscal note for SB 206, which pertained to long-term care insurance premium rates and benefits, Hilltop identified the total and PMPM Medicaid costs of acute care (non-nursing home claims) for dual-eligible nursing home residents in FY 2017.

SB 937: Hilltop assisted the Department in determining the fiscal impact of SB 937—which would prohibit the Department from denying access to HCBS to individuals discharged home from hospitals or SNFs—by calculating the number of unique individuals with a NF admission from a hospital, the percentage of those admissions from a hospital with any subsequent Medicaid payments and the percentage with any subsequent NF per-diem payments, and the number of NF discharges to the community that did not have subsequent enrollment in the CO waiver.

SB 939: Hilltop assisted the Department in determining the fiscal impact of SB 939, which would require that half of the people participating in the CO Waiver come from the community rather than NFs. Hilltop calculated the number of individuals participating in the CO Waiver who came from NFs and the number of participants who came from the community.

Behavioral Health Services

Screening, Brief Intervention, and Referral to Treatment: SBIRT is a public health approach for delivering population screening and early intervention and treatment services targeting SUD morbidity. 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. At the Department's request, Hilltop examined the use of SBIRT services among Maryland Medicaid participants. Hilltop identified all participants who used one or more SBIRT services in the period between January 1, 2015, and July 30, 2017, and the corresponding number of visits and services, by provider and MCO. In addition, Hilltop calculated the number of SBIRT services provided by each of Maryland's federally qualified health centers (FQHCs).

Behavioral Health Collaborative Care Model JCR: In FY 2017, the Maryland General Assembly required the Department to conduct a study and submit a report addressing primary behavioral

health services delivered by MCOs and the projected benefits and cost savings from implementing a collaborative care model. Hilltop conducted a number of analyses and drafted sections of the report. In FY 2018, the Department requested that Hilltop update the analyses it conducted for this study. These analyses included: the number of HealthChoice participants who had a behavioral health condition, categorized as having a mental health condition, SUD, or both; whether participants with an SUD received screening, brief intervention, and referral to treatment (SBIRT) services; and the number of participants with a behavioral health diagnosis broken down by MCO and region.

SUD Rate Review: In its final report, the Governor's Heroin and Opioid Emergency Task Force recommended that the Department review Maryland Medicaid rates for SUD services every three years. In FY 2017, Hilltop analyzed the rates and compared Maryland's rates with corresponding rates of neighboring states (Delaware, Pennsylvania, Virginia, West Virginia, and the District of Columbia). In FY 2018, Hilltop reviewed revenue codes for residential detoxification services from the neighboring states mentioned above and developed a matrix that compared the fees of 38 SUD procedures across these states.

Behavioral Health Adolescent and Youth Financial Mapping: The Behavioral Health Adolescent and Youth Financial Mapping Project is a partnership between the Department's Behavioral Health Administration and the Department of Psychiatry at the University of Maryland Medical Center. This project, funded by a grant from the Substance Abuse and Mental Health Services Administration (SAMHSA), aims to characterize and analyze SUD spending for adolescents (13 to 17 years) and young adults (18 to 24 years). In FY 2018, Hilltop identified the number of Medicaid participants who used SUD services and the corresponding cost using two separate definitions of SUD diagnoses and treatments: a SAMHSA definition and the COMAR definition. Hilltop described each methodology, identified the primary differences between the two analytical approaches, and reported the results. Hilltop then identified several areas where minor adjustments in the methodology would help to refine the analysis and achieve the project's goal to identify Medicaid expenditures for SUD services provided to adolescents and young adults.

Section 1115 Waiver Planning: CMS granted Medicaid §1115 waivers to 12 states—including Maryland—to allow federal financial participation (FFP) for SUD treatment in Institutions for Mental Disease (IMDs). Hilltop conducted a number of analyses to assist the Department in implementing this waiver. Hilltop analyzed data provided by the Behavioral Health Administration that included Medicaid participants who received SUD treatment, identified the number of participants who were pregnant in FY 2015 to FY 2017, and identified the corresponding number of deliveries, sorted by payer source (FFS or MCO). Hilltop also identified the number of participants and associated SUD treatment costs in FY 2018, sorted by age (under 21 years and 21 years and over).

Participants with Substance Use Disorder: To assist the Department in responding to a request from Reuters, Hilltop calculated the number of Medicaid participants who had an SUD, as well as the number of participants who had an SUD and a co-occurring mental health disorder in CY 2013 through CY 2016.

Mental Health Parity: Hilltop provided consultation to the Department about the structure and content of a report about mental health parity.

Corrective Managed Care Program: The Corrective Managed Care (CMC) Program identifies participants who may be utilizing 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 national provider identifier (NPI) records and lock-in start and end dates, and to ensure that all HIPAA requirements for confidentiality and protection of information are followed.

Medicaid Billing Records: To assist the Department in fulfilling a Public Information Act (PIA) request, Hilltop analyzed the billing records for January 2000 through December 2017 of two individual mental health providers, including what services each provided and the corresponding diagnoses and reimbursement amounts.

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

> **Opioid Measures:** Hilltop conducted a number of analyses to help the Department develop measures to assess the effects of opioid use on the Medicaid program. Hilltop worked with the Department to determine a standard definition of "opioid" to use for analysis. Using the HEDIS definition and modified HEDIS measures, Hilltop conducted an analysis to measure the supply (number and percentage of individuals with an opioid prescription, delineated by MCO) and level of dosage (number and percentage of individuals receiving opioids at a high dosage) to Medicaid participants in CY 2016. Hilltop also measured the number of prescribing providers and pharmacies from which Medicaid participants are receiving opioids, and the dosage of opioid prescriptions for Medicaid participants.

Overdoses: In FY 2018, Hilltop conducted a number of analyses related to overdoses. Hilltop calculated the number of Medicaid participants who died as a result of an overdose (by an opioid or other drug) in CY 2016 or CY 2017, delineated by MCO. Hilltop also provided demographic information about these participants. Hilltop conducted an analysis of Medicaid participants who died as a result of an overdose (by an opioid or other drug); those participants who had an ED visit or inpatient hospital admission with a diagnosis of nonfatal opioid poisoning in CY 2016 or CY 2017; and whether or not the ED visit or inpatient admission occurred near the participant's date of death or within the calendar year.

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 2018. In addition, Hilltop provided utilization data by county for Medicaid participants in April and May 2018.

Non-Fatal Opioid Poisoning: To assist the Department in learning more about how non-fatal opioid overdoses are affecting the Medicaid population, Hilltop calculated the number of ED visits and inpatient hospital admissions with a diagnosis of nonfatal opioid overdose or poisoning in CY 2014 to CY 2016 and then conducted the same analysis for CY 2016 and 2017.

Other Data Analytics and Support

Prader-Willi Syndrome: To assist the Department in the preparation of a fiscal note for a bill requiring the state to apply for a Medicaid waiver for individuals with Prader-Willi Syndrome, Hilltop identified the total number of institutional and professional claims with a primary diagnosis of this condition for participants under the age of 22 years in CY 2015.

Member Match: In order to help the Department fulfill a request from researchers planning a collaborative study with the Department on ROI (return on investment) for an in-home medication-dispensing system, Hilltop matched study population data to Medicaid data to identify those who were Medicaid participants.

Cancer Screening and Treatment: To assist the Acting Chief of the Office of Health Care Financing prepare for a presentation to the American Cancer Society's Policy Forum on Access to Health Care, Hilltop provided a compilation of the findings of recent analyses it performed for the Department on cancer screening and treatment measures.

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 2018, Hilltop worked with the Department to determine the analyses and support it would provide for the project and define a scope of work.

Telehealth: In FY 2018, Hilltop analyzed telehealth claims for FY 2013 to FY 2017 and identified those with a behavioral health or somatic diagnosis. Because telehealth may be used in conjunction with a behavioral health service to assist with a co-occurring somatic problem, Hilltop identified telehealth episodes with both types of diagnoses and used the originating and distant site telehealth provider types to distinguish whether behavioral or somatic services were being delivered via telehealth.

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 MCHP enrollment and service utilization by pregnant women, infants, and children in CYs 2010, 2014, 2015, 2016, and 2017. As in past years, Hilltop analyzed enrollment and utilization data and provided responses to 18 questions on the 2018 application.

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 for the data request consistent with HIPAA regulations that require covered entities to make reasonable efforts to ensure that the "minimum necessary" PHI is disclosed. The scope of work is used 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 2018, the Department and UMBC developed a new multi-party DUA template for data requests 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 scope of work with the Department, Hilltop also develops a budget for the data request and arranges for payment from the requester.

In FY 2018, the Department and UMBC executed ten DUAs with external agencies and Hilltop proceeded to fulfill these data requests. Data requests vary from one-time extractions of summarized claims and encounters 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 2018.

Table 1. Data Requests

Requesting Organization	Description of Data Request
Abt Associates	Evaluation of the federal Section 811 Project Rental Assistance Program: Eligibility, claims, and encounter data for Medicaid participants living in Section 811 units and other HUD-funded housing programs and a comparison group.
Berkeley Research Group	Ambulatory Surgery Utilization for Medicaid Participants Residing in Baltimore City: Summary table of surgery utilization for Baltimore City Medicaid participants.
Berkeley Research Group	Ambulatory Surgery Utilization for Medicaid Participants Residing in Prince Georges County: Summary table of surgery utilization for Prince Georges County Medicaid participants.
Johns Hopkins University Bloomberg School of Public Health (Daumit)	Statewide Implementation of Health Homes for Serious Mental Illness: Building a Research Infrastructure: Linked Medicaid, eMedicaid, and Outcome Measurement System data of Medicaid participants enrolled in a behavioral health Chronic Health Home Program for analysis of providers and participants.
Johns Hopkins University Bloomberg School of Public Health (Gaskins)	Evaluation of the Impact of the Health Enterprize Zones Initiative on Maryland Medicaid Enrollees' Hospital Use: Enrollment totals for comparison of HEZ residents to non-residents.
The Lewin Group	Attribution Model for MD Accountable Care Organization model: Full eligibility, claims, and encounters in Medicaid for population health comparison.
University of Maryland Foundation (Innovative Seed Track)	Prescription Opioid Exposure and Subsequent Dependence: Enrollment, pharmacy, and medical and dental service claims data of Medicaid participants aged age 12-63 years.

Requesting Organization	Description of Data Request
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.
Urban Institute	Strong Start for Mothers and Newborns: Data on participant mothers and children in Strong Start maternal and infant mortality prevention program.

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.

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 updates data electronically from the Department on a monthly basis and loads these data into analytic formats for policy, financial, and evaluation studies. Included in the data transmissions from the Department are FFS claims (medical, institutional, and pharmacy), MMIS eligibility, and encounter data. Hilltop receives and updates provider data quarterly. Hilltop processes more than 41 million Medicaid records each month. The encounter database is the largest—with more than 500 million records—followed by the FFS database, which includes more than 325 million records. Over 500 million records and 2,000 variables are processed annually. The NPI—a standard, unique identifier for covered health care providers, health plans, and health care clearinghouses that was adopted under HIPAA for all electronic administrative and financial transactions—has been included in Maryland Medicaid claims and HealthChoice encounters since 2008.

***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. In FY 2018, Hilltop received a weekly SQL database containing a full backup of the *LTSSMaryland* database back end. This database contains information on program eligibility and participation, health assessments, and plans of service for Maryland Medicaid LTSS recipients.

In FY 2018, Hilltop continued to support the Department's ongoing effort to develop and modify *LTSSMaryland.* The *LTSSMaryland* system supports several waivers and programs, including the CO, MDC, and BI Waivers; CFC, CPAS, ICS, and MFP programs; and reportable events (RE),

quality survey, nurse monitoring, and In-Home Supports Assurance System (ISAS) claims processing. In FY 2018, *LTSSMaryland* implemented several additional modules, including the interRAI pediatric assessment, electronic billing for interRAI and plan of care submissions, daily personal assistance service, and an urgent reportable events tracking process. Extensive modifications were made to the nurse monitoring module and brain injury quarterly review process. Requirements gathering and design review continued for MDC Phase II, REM, DDA module development, concurrent enrollment, self-direction data extract, and electronic billing for environmental modification assessments and home-delivered meals. 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. Hilltop uses the regularly updated copy of the complete *LTSSMaryland* data set it receives and maintains for its analyses for the Department.

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 recipients 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 nursing home residents in Maryland 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 2017.

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—Maryland's all-payer claims database—and allows for 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 2018, Hilltop prepared quarterly reports to MHCC describing the Department's use of MCDB data. Hilltop also transferred Medicaid CY 2015 eligibility, professional, pharmacy, provider, and institutional files as well as a data dictionary to MHCC by SFTP. In addition, Hilltop received and downloaded Medicare and commercial data files for 2015 and 2016.

eMedicaid: The Department has provided 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.

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 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 60 Department staff are registered to use the DSS. 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 offers in-person training courses to Department staff. Working with the Department, Hilltop made modifications to add Aetna—a new MCO in FY 2018—to the DSS and change the Department's name from DHMH to MDH. In addition, Hilltop added new user IDs, as needed. Starting in FY 2018, Hilltop began an initiative to upgrade the back end of the DSS with a high-performance data warehouse model. This effort is paired with the adoption of a new interactive and intuitive front end that will enhance and improve the end user experience. These updates to the DSS are expected to be complete in FY 2020.

Maryland Medicaid eHealth Statistics: Hilltop continued to maintain Maryland Medicaid eHealth Statistics (http://www.md-medicaid.org/), a public website that provides primarily data on Medicaid eligibility by age, coverage group, 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. These 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

University of Maryland, Baltimore County
Sondheim Hall, 3rd Floor
1000 Hilltop Circle
Baltimore, MD 21250
410-455-6854
www.Hilltopinstitute.org