The Hilltop Institute

analysis to advance the health of vulnerable populations

Maryland Department of Health and Mental Hygiene
Master Agreement
Annual Report of Activities and Accomplishments: FY 2016

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UMBC

AN HONORS UNIVERSITY IN MARYLAND

Table of Contents

A Nationally Recognized Partnership

The Hilltop Institute at UMBC

The Hilltop Institute at the University of Maryland, Baltimore County (UMBC), currently in its 22nd year of service to the state of Maryland, is dedicated to advancing the health and wellbeing of vulnerable populations. Hilltop, nationally recognized for its expertise in Medicaid and state health policy, is committed to addressing complex issues through informed, objective, and innovative research and analysis. With an extensive data warehouse and a staff of more than 50 full-time professionals—policy and financial analysts, economists, attorneys, actuaries, health care administrators, 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. With the future of the 2010 Affordable Care Act (ACA) in jeopardy, Hilltop's role in the State of Maryland becomes even more critical as the state weighs the benefits and challenges presented by federal legislative proposals aimed at replacing or revamping the ACA. At stake is the future of Maryland's marketplace, the Maryland Health Connection; accessible and affordable health insurance for low-income Marylanders covered through the Medicaid expansion as well as traditional Medicaid; and the Maryland All-Payer Model, which requires that the state achieve savings targets that may not be attainable if hospital uncompensated care surges with fewer Marylanders covered through the marketplace and Medicaid.

Since 1994, Hilltop has maintained a collaborative and highly productive partnership with the Maryland Department of Health and Mental Hygiene (the Department) and—more specifically—the Maryland Medicaid agency. This relationship is governed through an annual intra-governmental 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 warehouse to support program development, research, policy analysis, and rate setting. The data warehouse 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 mapping of public health and Medical Assistance information at the state and county levels.

Each year, Hilltop develops risk-adjusted capitation payments for HealthChoice, Maryland's Medicaid managed care program. In FY 2016, HealthChoice had eight participating managed care organizations (MCOs), served over 1 million beneficiaries, and paid $4.6 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. 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 of ACA initiatives such as the Medicaid expansion, the Money Follows the Person (MFP) Rebalancing Demonstration, the State Balancing Incentives Program, and Community First Choice (CFC). Hilltop also provides the Department with analytic support related to implementation of the Maryland All-Payer Model and monitoring the effects of this new statewide financing and delivery system 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) 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. Initially chartered to design and manage Maryland's High-Risk Patient Management Initiative, Hilltop (as the Center) was staffed by nurses, case managers, and analysts. The scope of work in the contract with the Department was focused on support for Maryland's most vulnerable populations—those who were both medically fragile and financially indigent—to access the health care services they needed. Not only did these individuals have multiple, complex health care needs, but the cost to the state of providing services to them was extremely high. The Department had two goals: 1) help this population access health care; and 2) manage the program in such a way that the state's scarce resources would be utilized in the most cost-effective manner. Together, the Department and UMBC designed a university-based center that would develop and manage this unique

program and provide research and analytics to determine whether the program was accomplishing its goals. Hilltop provided case management for the Rare and Expensive Case Management (REM) program 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 of Medical Assistance (Maryland's Medicaid program) as it expanded. Hilltop collaborated with the Department in the development of HealthChoice, as well as the HealthChoice §1115 Waiver applications. Today, Hilltop continues to conduct research and policy analysis for HealthChoice and develops capitated payment rates for HealthChoice providers. Over the years, Hilltop's role has evolved as the priorities and needs of the Department have changed.

Leveraging our Work

For the past decade, Hilltop has been leveraging its work to assist the Department in maximizing resources, both financially and by advancing knowledge about Maryland Medicaid. In 2007 and 2008, Hilltop partnered with the Department to secure multi-year funding from the Robert Wood Johnson Foundation (RWJF) Changes in Health Care Financing and Organization (HCFO) and State Health Access Reform Evaluation (SHARE) programs for three different projects that allowed for analyses of issues of importance to the Department. More recently, Hilltop partnered with Benefits Data Trust (BDT) to secure funding from RWJF to merge Medicare and Medicaid data to create a cohort of dual-eligible beneficiaries, as well as link these data with the Supplemental Nutritional Assistance Program (SNAP) and Maryland Energy Assistance Program (MEAP) data to examine the relationship between some social factors, health care utilization, and health outcomes. In 2015, Hilltop joined MHCC to analyze commercial claims in the Medical Care Data Base—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). 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. Hilltop is also partnering with other organizations on federally funded Indefinite Delivery/Indefinite Quantity contracts to conduct research and analyses that will inform the Department's work.

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. In June 2012, this type of

partnership was the topic of a special session at the AcademyHealth Annual Research Meeting titled *Building Research Collaborations with State Health Policymakers*. The Maryland collaboration was highlighted in the session. Furthermore, this session resulted in an article in the *Journal of Health Politics, Policy, and Law*, titled *Supporting the Needs of State Health Policy Makers through University Partnerships*, in which Hilltop and its partnership with the Department were prominently featured. In 2014, 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. Hilltop's executive director chairs the steering committee, and the network has grown to include 21 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 U MBC entered into a five-year Master Agreement with the Department that will extend through FY 2018. This annual report presents activities and accomplishments for FY 2016 (July 1, 2015, through June 30, 2016).

HealthChoice Program Support and Evaluation

In FY 2016, Hilltop continued to play a key role in supporting HealthChoice, Maryland's managed care program, 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 two waiver evaluation reports—one covering calendar year (CY) 2009 through CY 2013 and one covering CY 2010 through CY 2014—as part of the waiver renewal application. The CY 2009-2013 report first provided a brief overview of the HealthChoice 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; the quality of care delivered to enrollees; special topics, including ambulatory care service utilization, services provided to children in foster care, reproductive health services, services to persons with HIV/AIDS, and racial/ethnic disparities in utilization.

The CY 2010-2014 report addressed the Department's goals for the HealthChoice program and compared performance to state and national benchmarks. This report included the new post-ACA expansion population and assessed its impact on access and performance of the program as a whole. In addition, Hilltop continued to present selected Healthcare Effectiveness Data and Information Set (HEDIS) measures for the HeathChoice population and indicated whether these were above or below the national mean. The evaluation once again provided the Department with data and analytics related to coverage and access to care, enrollees with medical homes, and the quality of care provided.

Hilltop continued to perform in-depth analyses on such topics as enrollment trends and measures (e.g., ambulatory care and emergency department [ED] use among HealthChoice participants and provider network adequacy); integrated results from other studies, such as provider and Consumer Assessment of Healthcare Providers and Systems (CAHPS®) surveys; and guided report design, giving the evaluation increased depth and policy context and allowing 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 2016, Hilltop provided support to the REM program in the form of analysis and rate setting. 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.

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 enrollees in the CLR data, identifies the corresponding MCOs for these children, reports the blood lead testing and elevated blood lead level rates, and develops quarterly reports for distribution to the MCOs. The results of the lead tests are then reported to the MCOs for follow-up of children with elevated blood lead levels. Hilltop began this analysis and quarterly reporting process in FY 2008 and continued to produce these quarterly reports for the Department throughout FY 2016. Hilltop also prepared the annual county-based analysis of lead testing results for HealthChoice children aged 12 to 23 months and 24 to 35 months, which was submitted to MDE.

Value-Based Purchasing: In FY 2016, Hilltop reviewed the value-based purchasing (VBP) technical specifications used in CY 2015 and made updates to reflect changes in the specifications for 2016 VBP measures. Additionally, Hilltop prepared the HealthChoice VPB targets for CY 2016 and compared the lead screening VBP measure to the rates reported by the HEDIS vendor, which uses a different measure. Hilltop completed the final ambulatory care VBP measure for HealthChoice enrollees with disabilities for CY 2014 and the preliminary ambulatory care measure for CY 2015; the preliminary lead VBP measure for CY 2015, which calculated the percentage of children aged 12 to 23 months who received a blood lead test during the calendar year or the year prior to the calendar year; and the final lead VBP measure for CY 2014. In addition, per the Department's request, Hilltop re-analyzed the lead VBP data from one MCO to reconcile the number of lead tests the MCO stated it performed with the claims/encounters for the tests that it submitted. Hilltop provided the Department with a history of the changes to the lead measure by providing memos it had produced regarding these changes over the past seven years; and provided historic lead measures for CY 2011 through CY 2014 and ambulatory care measures for CY 2004 through CY 2014, both broken out by MCO. Hilltop also provided consultation regarding better explaining the VBP lead measure related to children not disenrolling in HealthChoice before their first birthday.

Managing for Results: In FY 2016, Hilltop prepared annual asthma and diabetes Managing for Results (MFR) measures for CY 2014. For HealthChoice adult enrollees diagnosed with diabetes and children diagnosed with asthma (in accordance with HEDIS enrollment criteria), Hilltop analyzed the number of avoidable hospital admissions for both conditions. Hilltop also prepared the CY 2014 lead 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 2014. In addition, Hilltop prepared racial disparities MFR measures, calculating average annual growth for enrollment and

ambulatory care visits by race and the racial disparities gaps for CYs 2010-2014. Hilltop analyzed the birth weight of newborns in the HealthChoice program during CYs 2010-2014 and provided the numbers and percentages of total births of newborns with very low birth weights in those years. Finally, Hilltop re-calculated the annual MFR objectives using the trends from the actual data.

Encounter Data Reporting and Validation: Through monthly, quarterly, and annual reports to the Department and the MCOs, Hilltop verified the completeness, correctness, 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 enrollee; 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 enrollees who used services within the past calendar year; the ratio of service users to enrollees; 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. The process Hilltop continued to follow for monitoring and validating encounter data was described in a November 2005 report. In FY 2016, Hilltop produced an encounter data validation report on MCO encounters for CY 2014.

Shadow Pricing: The HealthChoice MCOs are not required to report the actual payment amounts for services when submitting their encounter data to the Department. Although these data are not reported, the Department often has the need to estimate the costs of services, such as for their new requirement to report MCO data to MHCC's Medical Care Database (MCDB). To assist the Department in this effort, Hilltop continued to estimate or "shadow price" these MCO payments in FY 2016. This included developing different methodologies for different types of services. For professional services, shadow pricing includes (1) applying the fee-for-service (FFS) fee 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 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.

Cost Analysis of Baltimore City Mental Health Capitation Project: In FY 2016, Hilltop conducted a cost analysis of the Baltimore City mental health capitation project. Hilltop

reviewed lists of beneficiaries enrolled in CY 2014 and CY 2015 and calculated the total FFS and MCO costs, by service category, for CY 2014 and the first 10 months of CY 2015.

Provider Network Adequacy and Access Pilot: To assist in monitoring provider network adequacy and access, Hilltop collaborated with the Office of Planning and the Office of Health Services to conduct a pilot survey of primary care provider (PCP) offices focusing on verifying the accuracy PCP directory information. The project team designed the survey instrument and Hilltop reviewed the MMIS2 provider directory data to determine the number of PCPs serving HealthChoice participants; estimated the sample size for the initial pilot survey; conducted phone calls to administer the survey to a sample of 200 providers; analyzed survey responses; and wrote the corresponding sections of the Department's report on the project.

Primary Care Provider Utilization Study: To assist the Department in better understanding the level of utilization of PCPs by Medicaid enrollees, Hilltop developed templates (and instructions on how to use them) that MCOs could use to report PCP utilization. In addition, Hilltop collected the reports and analyzed the data.

Active Providers: At the request of the Department, Hilltop calculated the number of active providers categorized by certain provider types.

Medicaid Rate Setting

In FY 2016, the state of Maryland paid $4.6 billion in capitation payments to the eight HealthChoice MCOs, which provide health insurance for more than one 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) and the Trauma and Emergency Medical Fund.

HealthChoice Rate Setting and Financial Analysis: In FY 2016, Hilltop worked with the Department to develop risk-adjusted capitation payments for MCOs participating in HealthChoice. Maryland's risk-adjusted payment methodology is based on 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 free of charge. Hilltop contracts with Johns Hopkins for ongoing support with the ACG system and the rate setting methodology.

Hilltop's responsibility for managing the Department's MCO Rate Setting Committee involves—during each annual rate-setting cycle—scheduling, developing the agendas for, and facilitating a series of eight two-hour public meetings with officials from the Department, the eight 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 to both the MCOs and the Department, 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 managed care rates in other states. During each annual rate setting cycle, Hilltop also schedules and facilitates one-on-one meetings between the Department and each of the eight 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, permitting active participation by MCOs. 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.

In FY 2016, Hilltop worked extensively with the actuarial firm Optumas to complete and certify CY 2016 HealthChoice capitation rates and initiate development of CY 2017 capitation rates. 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 CYs 2016-2020.

HealthChoice Financial Monitoring: To better understand the cost differences among MCOs and the impact 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 2016, Hilltop analyzed specific variances in membership, premium income, and cost of medical care during CY 2012. Hilltop prepared quarterly reports for the Department that summarized—for all MCOs—capitation payments and enrollment by major eligibility category and examined the variance between planned payments and associated member months to actual results. In addition, Hilltop prepared a complete financial report package that analyzed MCO underwriting performance.

Nursing Home and Program for All-Inclusive Care for the Elderly Rate Setting: In FY 2016, Hilltop assisted the Department in developing nursing home "Pay for Performance" scores and analysis, a wage survey database, and provided a Medicare upper payment limit calculation. In addition, Hilltop continued to develop the annual calendar year rates for Hopkins Elder Plus, a PACE program in Baltimore City.

Trauma and Emergency Medical Fund: In FY 2016, Hilltop continued to calculate monthly supplemental reimbursement payments for the Trauma and Emergency Medical Fund based on trauma physician fees.

Analytics to Support Health Reform

In FY 2016, 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 2016, Hilltop continued to support the Department in monitoring the Medicaid expansion. The ACA gave states the opportunity and incentives to expand Medicaid eligibility to households with incomes up to 138 percent of the federal poverty level (FPL), and Maryland was one of the states that chose to expand Medicaid.

Reporting on the Medicaid Population: In FY 2016, Hilltop continued to conduct analyses and provide assistance to the Department in determining the changes to 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 permission from the Department, Hilltop provided CRISP with eligibility and demographic information for all Medicaid participants enrolled between January 1, 2013, and June 30, 2015, as well as between January 1, 2013, and March 31, 2016, including a data dictionary with each submission. Hilltop identified all the individuals who were enrolled in Medicaid between January 1, 2013, and June 30, 2015 and uploaded the data to CRISP. Hilltop reported the number of Medicaid beneficiaries enrolled each month for CYs 2013 through 2015—delineated by MCO, whether they were dual-eligible beneficiaries, and whether they were FFS—and reported the number of beneficiaries by month for FY 2015.

Projecting Medicaid Enrollment: In FY 2016, Hilltop continued to project Medicaid enrollment. Medicaid enrollment projections are used for Medicaid program budgeting. At the request of the Department's Deputy Secretary for Health Care Financing, Hilltop developed econometric models that forecasted monthly Medicaid enrollments by coverage category. The econometric models estimated the effects of the Maryland's employment and unemployment rate on enrollment for different Medicaid coverage categories. The Office of Finance provided historical data for 27 eligibility groups summed up to 13 coverage categories that were used for model estimation and forecasting. Hilltop presented the models and their graphical forecasts to Medicaid directors in several quarterly meetings during September 2015 through June 2016 period.

Maryland All-Payer Model

As part of the requirements under the state's All-Payer Model Agreement with CMS, the HSCRC is required to report on and monitor the total cost of health care. In particular, the HSCRC must monitor trends in health care costs within its regulatory domain and any cost-shifting to unregulated settings. In FY 2016, Hilltop provided significant support and conducted a number of analyses to assist the Department in reporting Medicaid total cost of care.

Total Cost of Care: In FY 2016, in order to analyze total cost of care (TCoC), Hilltop grouped counties into eight regions for MCO reporting and Hilltop analysis of their total cost of care (TCoC); compiled a list of urgent care, walk-in care, and convenient care providers; analyzed the MCO-reported data and worked with individual MCOs to assist them in ensuring the data they reported were accurate; analyzed and summarized the data and provided the results to the Department; and compared the amount of kick payments by MCO for normal, low, and very low birth weight in the HealthChoice Financial Monitoring Report (HFMR) with their reported TCoC in 2013. In addition, Hilltop separated the provider list by facility type; revised the TCoC reporting template separating inpatient and outpatient reporting for unregulated hospitals; and reviewed and compared the HSCRC's list of providers with the TCoC list and made recommendations as to what updates were necessary. Hilltop produced a TCoC report for 2013, which included sections on eligibility, total costs (which combines the FFS and MCO utilization and expenditures), and MCO-only total costs.

Medicaid Expenditures for Hospital Services: At the request of the Department, Hilltop estimated the percentage of inpatient and outpatient hospital expenditures in Maryland paid by Medicaid.

All-Payer Hospital System Modernization Workgroups: In FY 2016, Hilltop continued to provide consultation and support to the Medicaid representative of various HSCRC Workgroups by attending meetings and answering various questions about the Medicaid data.

Health Homes

Section 2703 of the ACA, "State Option to Provide Health Homes for Enrollees with Chronic Conditions," created the option for state Medicaid programs to establish health homes, which are intended to improve health outcomes for individuals with chronic conditions by providing patients with 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 substance use disorders (SUDs).

Health Home Program Evaluation: In FY 2016, Hilltop continued to conduct several analyses to evaluate and support the Maryland Health Home program. Hilltop produced two quarterly reports for the program—the first encompassing quarters 1 through 6 and the second encompassing quarters 1 through 8—that measured participant characteristics, health home services, and health care utilization and quality. Hilltop also produced provider-specific reports for quarters 1 through 8, with each provider's data presented to them individually. Hilltop calculated monthly enrollment in the Health Home program from the inception of the program through December 2015 and updated this calculation to include monthly percentage change in enrollment, as well as an unduplicated count of individuals who were ever enrolled in the Health Home program.

Behavioral Health Emergency Department Visits: In FY 2016, Hilltop examined trends in emergency department (ED) visits per quarter from January 2013 through March 2015 by persons aged 18 to 64 years who were continuously enrolled in Medicaid across CYs 2013 and 2014 and were in one of four groups: Maryland Behavioral Health Network (MBHN) clients, Way Station clients, the health home study group, or the Health Home comparison group. Hilltop also calculated the frequencies of Health Home enrollees and potential enrollees with four or more ED visits or hospital admissions and/or fewer than four ambulatory care visits during CY 2014.

Community First Choice

The Community First Choice (CFC) program, implemented on January 6, 2014, resulted from Section 2401 of the ACA, 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. Under Maryland's CFC program, 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 2016, Hilltop conducted the following analysis to support the Department's implementation of the CFC program.

Service Utilization: To assist the Department in expanding its flexible budgeting methodology for CFC, Hilltop analyzed both interRAI assessments and MMIS claims data to determine the distribution and level of service utilization by individuals enrolled in the program. Hilltop identified the most recently completed interRAI for individuals who were assessed between

January 5, 2014, and October 1, 2014, and who also met the requirements for nursing facility (NF) level of care. Hilltop then attached a summary of claims for personal emergency response systems (PERS), environmental services, and technology that occurred within six months after that individual's interRAI assessment.

Home and Community-Based Services

Community-Based Setting Final Rule: On March 17, 2014, CMS issued a Final Rule defining what constitutes a home and community-based services (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 and must be in full compliance with the federal requirements by the timeframe approved in the Statewide Transition Plan but no later than March 17, 2019. In FY 2016, Hilltop continued to perform tasks to assist the Department in its efforts to comply with the Final Rule. Hilltop analyzed the criteria of the Final Rule, compared them to the criteria of the provider self-assessment, and developed a crosswalk identifying issues about which the state would need to make decisions. Hilltop then developed a final crosswalk of the provider self-assessment questions and the Final Rule regulatory criteria. In addition, Hilltop developed crosswalks of the self-assessment questions with the HCBS Final Rule community settings regulatory criteria and CFC instrument. The CFC instrument, also referred to as the Community Settings Questionnaire (CSQ), is administered to CFC participants to ensure that their residential settings meet HCBS Final Rule criteria. The crosswalk was done to assist the Department in determining whether it could be used to validate the provider self-assessments. Hilltop worked with the Department to develop the instrument for the self-assessment, clarifying outstanding issues regarding CMS requirements; piloting the assessment; analyzing the results of the pilot; finalizing the assessment instrument; and developing a coding scheme for both the Medicaid program's and the Developmental Disabilities Administration's assessments, which were conducted separately.

Community Options Waiver Cost Study: Hilltop continued to study Maryland's Community Options (CO) Waiver, which became operational on January 6, 2014. Hilltop analyzed service use, the monthly census, expenditures, individual budgets, and the average costs per person and presented its findings to the Community Options Advisory Council.

Other Support

Mental Health Parity: On March 30, 2016, CMS issued a Final Rule on the *Application of Mental Health Parity Requirements to Coverage Offered by Medicaid Managed Care Organizations (MCOs), the Children's Health Insurance Program (CHIP), and Alternative Benefit Plans (ABPs).* Hilltop reviewed the Final Rule and provided a detailed summary of all its provisions, as well as items of note to the Department. In FY 2016, Hilltop also reviewed the 2013 and 2016 Parity Rules and created a chart for the Department detailing the data elements that the state would need to collect from the MCOs. In addition, Hilltop reviewed and commented on an instrument that the Department had prepared to survey the MCOs.

Medicaid Managed Care: On June 1, 2015, CMS issued a proposed rule titled *Medicaid and Children's Health Insurance Program (CHIP) Programs; Medicaid Managed Care, CHIP Delivered in Managed Care, Medicaid and CHIP Comprehensive Quality Strategies, and Revisions Related to Third Party Liability.* In FY 2016, Hilltop reviewed the notice of proposed rulemaking (NPRM), summarized it, highlighted items in which the Department may be particularly interested, and provided consultation to the Department about various provisions of the NPRM.

Enrollee Redeterminations: In FY 2015, the Department was required to use a new process to redetermine eligibility for individuals enrolled in Modified Adjusted Gross Income (MAGI) coverage groups. In FY 2016, Hilltop continued to follow its plan for its role in this process, which included Hilltop continuing to send lists of these individuals to their respective MCOs each month and tracking the redeterminations. Hilltop completed a redetermination/utilization analysis, calculating the numbers and percentages of FFS claims and MCO encounters for enrollees who failed to complete their redetermination, delineated by mailing month for CY 2014; an analysis of CARES redeterminations for enrollees in the "Aged, Blind, Disabled—Medically Needy" (S98) and MAGI coverage groups as of July 2015; and an updated CARES and former Primary Adult Care (PAC) analysis. Hilltop also updated the CARES and former PAC analyses to include individuals who enrolled in a qualified health plan (QHP). In collaboration with the Department, Hilltop described the redetermination process for the interim period until the new information technology system known as HBX would be fully implemented and made compatible with the MMIS2 and CARES, as well as produced examples of summary tables for presenting the data. Hilltop also developed a data processing timeline. Hilltop composed memos to the Department that described the monthly redetermination tracking process and the data files that are used to perform the analysis and consulted with the Department on how best to present various aspects of the findings. Hilltop analyzed the enrolled Medicaid population and delineated those households who were in the MAGI coverage group from those who were not; estimated the number of individuals who did not complete or who started an

application from April through August 2015; produced some presentation slides on this topic for the Deputy Secretary; produced an analysis that detailed the various enrollment statuses for individuals with a redetermination end date in April, May, or June 2015; and calculated the frequency of individuals by county, by age group, and without a renewal as of December 2015. In addition, Hilltop calculated and provided demographic individual-level data for the frequency of children (aged 0 to 20 years) with a redetermination not complete as of November 2015 delineated by county.

Enrollee Renewals: In FY 2016, Hilltop provided monthly reports on renewals, identifying enrollees who renewed their membership in the various MCOs delineated by those who auto-renewed and those who manually renewed; compiled monthly lists of those who renewed for each MCO; and identified those enrollees who had no MCO. In addition, Hilltop began to track the monthly enrollment status of individuals who auto-renewed or required manual renewal of Medicaid eligibility. This tracking process relates to the Maryland Health Benefit Exchange's (MHBE's) implementation of HBX. The monthly Medicaid renewal analysis involves two sets of data files provided by the Department: monthly files for individuals who auto-renewed or required manual renewal of Medicaid eligibility, delineated by the month of their closure date; and monthly QHP enrollment files that are used to determine who has enrolled in a QHP. First, Hilltop conducted a preliminary analysis covering October 2015 through April 2016 to determine whether individuals either had an active Medicaid eligibility span or enrolled into a QHP.

Financial Analysis

In FY 2016, Hilltop continued to provide the Department with financial analysis related to Medicaid reimbursement rates, physician fees, dental services, and pharmacy and SUD treatments and services.

Reimbursement Rates Fairness Act: Pursuant to SB 481 (Chapter 464 of the Acts of 2002), the Department created an annual process to set the FFS reimbursement rates for Maryland Medicaid (Medical Assistance) and CHIP in a manner that ensures provider participation. The law also directed the Department to submit an 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 and a comparison of those rates to the FFS rates paid to similar providers for the same services under the Medical Assistance program and the rates paid to MCO providers for the same services; 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; the schedule for raising rates; and an analysis of the estimated cost of implementing these changes. In September 2001, in response to HB 1071 (Chapter 702 of the Acts of 2001), the Department prepared the first annual report analyzing the physician fees that are paid by Maryland Medicaid and CHIP. In 2002, SB 481 required the submission of this report on an annual basis. In December of 2015, Hilltop prepared and submitted the fifteenth annual report.

Physician Fees: In addition to the analyses described above, in FY 2016, Hilltop consulted with and provided technical assistance to the Department regarding increasing physician fees. Hilltop compared Medicaid fees to Medicare fees and estimated the percentage of Medicaid fees to Medicare fees for all procedures. Then, Hilltop estimated the cost if fees for evaluation and management (E&M) procedures remained at 92 percent of Medicare fees; and estimated costs of increasing E&M fees to different percentages of Medicare fees in FY 2017. In consultation with the Department, Hilltop continued to re-estimate the costs throughout the year, adding and subtracting various factors, including calculating the breakdown of payments for E&M and specialty procedures by FFS and MCOs, as well as savings to the state if fees for E&M procedures were set at various percentages of corresponding Medicare fees. Hilltop calculated the Medicare rates for the Baltimore area based on the CMS 2016 files and recalculated cost savings; calculated the cost to the state Medicaid program for dual-eligible beneficiaries if CMS did not provide an inflation increase in 2016 Medicare Part B payments; estimated CY 2016 total Medicaid payments and increase in costs for Medicare Part B premiums due to the "hold harmless" rule for dual-eligible beneficiaries; calculated the percentage that E&M payments

were of all payments for physician services; and broke down the number of MCO encounters by MCO for E&M procedures performed in facilities and non-facilities.

Medication Analysis: Hilltop analyzed the total payment for the medication Acyclovir, broken out by FFS and MCOs.

Cost Containment: To assist the Department in reporting on cost containment, Hilltop calculated enrollment and utilization for enrollees in select Medicaid coverage groups for CY 2014. Utilization measures included hospital inpatient and outpatient visits, physician visits, dental, long-term care (LTC), pharmacy, and home health services.

Capitation Payments: To assist the Department in verifying the number of Medicaid enrollees who received capitation payments in the Aged, Blind, Disabled (ABD) coverage group, Hilltop reviewed the data to confirm that the recipients did not have prior ABD coverage in 2013 or 2014 and that all the ABD capitation payments listed were correct. Hilltop then described any discrepancies and made some programming changes to facilitate the Department's access to information.

Pay for Performance (P4P): Hilltop developed an overview of the P4P method of payment to providers—the use of payment methods and other incentives to encourage quality improvement and patient-focused high value care—and how this method is used in different venues.

Other Analyses and Technical Support

In FY 2016, Hilltop conducted extensive analyses for the Department to support program and policy deliberations related to Medicaid coverage, health services utilization, provider participation in the Medicaid program, dental services, and long-term services and supports (LTSS). Hilltop also provided data analytics for grant applications submitted to federal agencies by the Department.

Coverage and Health Services Utilization

HPV Vaccinations: Hilltop provided estimates of human papillomavirus (HPV) vaccination rates for female adolescents enrolled in Medicaid as of the year they turned 13 for CY 2011 through CY 2015, calculated according to HEDIS 2015 technical specifications. Hilltop also calculated the HPV and colorectal cancer rates for HealthChoice enrollees for CY 2011 through CY 2015.

Pregnant Women: Hilltop estimated the prenatal care utilization rates for women enrolled in Medicaid who had a live birth from CY 2010 to CY 2014. To conduct the analysis, Hilltop identified all live births in each respective year, estimated the pregnancy start date for each participant, estimated the elapsed time between the pregnancy start dates and Medicaid eligibility beginning dates, and estimated when each participant received prenatal visits. The data were also broken out by various demographic characteristics.

Family Planning: Hilltop conducted an analysis of contraceptive use by Medicaid enrollees in CY 2014. Hilltop identified oral contraceptive prescriptions received by participants during FY 2014; calculated the number of participants with at least a 56-day supply of family planning prescriptions who lost eligibility within 8 months of the prescription date and regained Medicaid eligibility within 1 to 6 months during CY 2014; repeated the analysis for FY 2014; calculated the total payments for oral contraceptives; and investigated the re-enrollment of participants who lost Medicaid eligibility within 8 months of receiving a prescription for 56+ day supply of oral contraceptives.

Eye Exams: Hilltop identified the number of children, aged 0 to 20 years, with any period of Medicaid enrollment who received at least one eye exam, delineated by MCO and county. This analysis was completed for CY 2014.

Methadone Treatment: In FY 2016, Hilltop provided quarterly reports on the number of enrollees (in both FFS and MCOs) who received a methadone treatment in CY 2015.

Assuring Access to Care: 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." CMS issued a Final Rule with comment period on the *Medicaid Program: Methods for Assuring Access to Covered Medicaid Services.* At the Department's request, Hilltop attended a CMS webinar, summarized the discussion, presented the information learned to Department staff; and summarized the rule and highlighted items in which CMS requested public comment. The Final Rule requires states to develop an access monitoring review plan for services provided through Medicaid FFS delivery systems. Hilltop summarized the requirements for the plan and set out a timeline for the Department to prepare and submit its first plan. In addition, Hilltop determined what analyses were needed for reporting and designed a template for the access plan monitoring report. Hilltop also began the analyses required for the state's first access monitoring review plan submission.

MCO Review Tool: At the request of the Department, Hilltop revised the instrument used to review MCO applications.

Express Lane Eligibility: To assist the Department in responding to a request from the Office of the Inspector General of the U.S. Department of Health and Human Services, Hilltop reviewed the response and made some suggestions for better clarification.

Provider Participation

Electronic Health Record Incentive Program: To assist the Department in determining whether hospitals qualified to receive electronic health record (EHR) incentive payments, Hilltop calculated the percentage of Medicaid outpatient ED encounters for each hospital in Maryland in FY 2014; calculated the trends in these percentages for three hospitals from FY 2011 through FY 2014; calculated percentage ratios of Medicaid to total utilization, in terms of discharges and days, by individual month and by 90 day spans for these three hospitals; and calculated trends and percentages for two other hospitals for CYs and FYs 2007-2013.

Dental Services

Dental Services for Former Foster Children: In order to assist the Department in determining the cost of expanding dental coverage to young adults who were former foster children, Hilltop calculated the number of enrollees aged 18 years and the number of enrollees aged 21-25 by month for CY 2015.

Dental Joint Chairman's Report: In FY 2016, 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 2014 using 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; and 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. In addition, Hilltop provided the same data for CYs 2010 to 2013. Hilltop reviewed the Medicaid section of the final report, updated some of the calculations, made corrections based on updated data; and calculated the number and percentage of Medicaid enrollees with any dental service, by age group in CY 2014.

Long-Term Services and Supports

Hilltop supported the Department in activities required under the State Balancing Incentive Payment (BIP) Program; 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 *LTSSMaryland*—the state's integrated LTSS tracking system—including interRAI assessment data and plans of service.

Nursing Facility Admission Predictors: In FY 2016, Hilltop determined the predictive value of the questions on the Level 1 screening tool for subsequent NF admission. Hilltop analyzed the most recent screen for 2,196 individuals—submitted between October 20, 2014 and December 31, 2015—and then calculated the amount of time between the screening date and the NF admission for the 229 individuals who had a subsequent Minimum Data Set (MDS) NF admission. Finally, Hilltop loaded the resulting data set into a proportional hazard regression model in order to calculate the effect of each screening response on any subsequent NF admission.

Home and Community-Based Options and Autism Waivers Rate Methodology Studies: Hilltop conducted rate methodology studies for the Home and Community-Based Options (HCBO) and Autism Waivers. Hilltop reviewed rate methodology studies conducted in other states, including Arizona and Maine and then developed a plan for Maryland's waivers. Information from the other states included productivity assumptions (i.e., amount of time not

spent with participants or trainings) and other necessary components to include when determining rates. Previous rate studies conducted in Maryland were also used to estimate capital and equipment costs. Hilltop also relied on benefit and wage information from the Bureau of Labor and Statistics (BLS). The BLS wage information was used to construct a matrix to determine base hourly wages for specific services of the waivers. Hilltop issued a separate report on the findings of the Autism Waiver rate methodology study.

Money Follows the Person Benchmarks: In FY 2016, Hilltop continued to report information on all HCBS expenditures for all Medicaid (not just MFP) recipients in the semi-annual reports it produced for CMS on the state's progress in achieving MFP benchmarks. Each quarter, Hilltop also prepared MFP reporting files for submission to Mathematica Policy Research, the national MFP program evaluator. This work involved converting MMIS2 files for each MFP participant to Medicaid Statistical Information System files. The files required by Mathematica for each MFP participant include a finders file containing demographic and eligibility information; a participation data file, which holds more specific information on the participant than the finders file; and a service file with claims data.

Chart Books: In FY 2016, Hilltop produced three chart books. As described in the section on dual-eligible beneficiaries below, Hilltop produced a new chart book titled *The Maryland Dual-Eligible Beneficiaries Chart Book.* Hilltop also released Volume 1 of its chart book series titled *Medicaid Long-Term Services and Supports in Maryland*, which summarizes demographic, service utilization, and expenditure data for participants in the LAH Waiver, Medical Day Care (MDC) Waiver, and WOA, as well as participants in Maryland's MAPC Program during FY 2010 through FY 2013. This chart book also summarized information for Maryland Medicaid NF residents. Volume 2 reported on the Autism Waiver.

Autism Waiver Reporting: In FY 2016, using the reporting mechanism it developed for the Department, Hilltop continued to analyze the "grey 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 grey area population. Hilltop produced quarterly reports to support the Department's invoicing to MSDE. In addition, Hilltop calculated the number of individuals on the Autism Waiver registry with a current Medicaid eligibility span, delineated by age and county.

StateStats: Hilltop produced monthly updates for Maryland's StateStats website on cumulative enrollment from January 1, 2001, to September 30, 2015, for the HCBO Waiver and Autism Waiver.

CMS 372 Reports: In FY 2016, Hilltop calculated the number of non-MFP waiver recipients, the average cost per person for waiver services, and the average cost per person for non-waiver services in FY 2014. These reports are used to determine cost neutrality for the state's 1915(c) WOA, LAH Waiver, Traumatic Brain Injury (TBI) Waiver, Community Pathways Waiver, MDC Waiver, New Directions Waiver, Autism Waiver, Model Waiver, and Residential Treatment Center Waiver.

Standardized Assessment Tool Study: In FY 2016, Hilltop continued to conduct analyses of the interRAI assessment tool to assist the Department in determining the tool's impact on agency operations. Hilltop also determined the distribution of the amount of time it currently takes to complete the interRAI assessments by analyzing both the in-person and additional assessment times for 13,559 interRAI assessments completed between January 1, 2015, and December 31, 2015.

Children with Complex Medical Conditions: In FY 2016, the Department requested that Hilltop update the analysis it conducted in FY 2015 that studied persons under the age of 25 with a complex medical condition (CMC)—i.e., those who are enrolled in the REM program or the Maryland 1915(c) Medicaid Model Waiver—to determine the levels of service utilization. The FY 2016 update focused on all persons with a CMC from FY 2013 to FY 2015, regardless of age, and divided the study population by persons aged 18 and under and those aged 19 and older.

Dual-Eligible Beneficiaries

Dual-Eligible Beneficiaries' Use of Inpatient Services: There is a requirement that admission to a Medicare skilled nursing facility (SNF) be preceded by an inpatient hospitalization of at least 3 days. In order to estimate the extent to which a federal waiver of this requirement may lead to greater utilization of Medicaid institutional LTC services, Hilltop analyzed the utilization of Medicare inpatient services by Maryland's dual-eligible beneficiaries and their subsequent utilization of SNF and LTC services. Hilltop then analyzed dual-eligible beneficiaries residing in LTC facilities, as well as their subsequent utilization of Medicare inpatient services to determine if LTC patients returned to their LTC facility more quickly.

Providers Serving Dual-Eligible Beneficiaries: In FY 2016, per the Department's request, Hilltop identified services rendered by patient-centered medical home (PCMH) providers to dual-eligible beneficiaries in CY 2014.

Study of Full-Benefit Dual-Eligible Beneficiaries: Hilltop conducted a series of analyses on the health care utilization of Maryland's full-benefit dual-eligible beneficiaries. Together, these analyses provide an overview of how this population accesses health care services, the types of

services being used, and where the services are provided. Hilltop published three reports on the findings of the study and a chart book.

Characteristics of Maryland Full-Benefit Dual-Eligible Beneficiaries with Three or More Inpatient Stays explores utilization of inpatient services by "high utilizer" full-benefit dual-eligible beneficiaries, defined as those who had three or more inpatient stays during CY 2012. The report examines demographics and county of residence; providers serving this population; chronic conditions and most frequent diagnosis-related groups; and Medicare and Medicaid expenditures and service days.

Maryland Full-Benefit Dual-Eligible Beneficiaries' Use of Medicare and Medicaid Services Preceding and Following a Medicare Inpatient Stay explores full-benefit dual-eligible beneficiaries' use of post-acute care (i.e., skilled nursing, inpatient rehabilitation, NF services, hospice, and home health services) in the 30 days immediately following a Medicare inpatient hospital stay, as well as their settings of care on the date of admission or in the seven days preceding a Medicare inpatient hospital stay. In addition to pre- and post-inpatient settings, the report examines demographics, county of residence, and the most frequent diagnosis-related groups for the population studied.

An Analysis of Selected Mental Health Conditions among Maryland Full-Benefit Dual-Eligible Beneficiaries examines full-benefit dual-eligible beneficiaries with a mental health diagnosis in Maryland during CY 2012, including number and type of mental health conditions; demographics and county of residence; emergency department use; and Medicare and Medicaid expenditures and service days.

The Maryland Dual-Eligible Beneficiaries Chart Book provides an overview of Maryland full-benefit dual-eligible beneficiaries with breakdowns by benefit category, age, race, gender, and county of residence; the cost to Medicare and Medicaid of providing care to this population; and the prevalence and costs of chronic health conditions. The chart book is the most recent edition in Hilltop's chart book series, which includes publications on Medicaid LTSS in Maryland and Medicaid services for individuals with TBI and autism.

Other Data Analytics

Opioid Deaths: Hilltop identified the number of Medicaid participants who died due to an opioid-related overdose during CY 2015. Hilltop also refined this analysis to identify participants who were enrolled in Medicaid at any point during CY 2015 and died from an opioid overdose in that year.

Behavioral Health Administrative Service Organization Evaluation: In FY 2016, Hilltop assisted the Department in evaluating the behavioral health administrative service organization (ASO) by preparing the results of the following six HEDIS measures used to monitor and evaluate the ASO: Antidepressant Medication Management, Follow-Up Care for Children Prescribed ADHD Medication, Adherence to Antipsychotic Medications for Individuals with Schizophrenia, Initiation and Engagement of Alcohol and Other Drug Dependence Treatment, Mental Health Utilization-Inpatient Utilization, and Plan All-Cause Readmission. Hilltop also developed person-level data sets to share with the ASO to allow it to examine the data used to calculate the rates for each measure.

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 University of Maryland Department of Psychiatry that aims to characterize and analyze SUD spending for adolescents 13-17 years and young adults 18-24 years. The project is funded by a grant from the Substance Abuse and Mental Health Services Administration (SAMHSA). Hilltop analyzed the Medicaid expenditures for SUD services delivered to the target population in FY 2014, delineated by age (13-17 years and 18-24 years) and cost center. These data were later included in a report presented to SAMHSA.

Concussions: At the request of the Department, Hilltop calculated how often Medicaid children (aged 6 to 18 years) experienced concussions during CY 2014.

Specialty Mental Health Visits: Hilltop conducted a review of persons with a specialty mental health diagnosis that had been recorded at least ten times during CYs 2012, 2013, and 2014 to determine the frequency of service utilization for this population.

Methadone Users: To assist the Department in responding to a media request, Hilltop identified the number of individuals who received methadone treatment in FYs 2005, 2014, and 2015.

Homeless Population: In FY 2016, Hilltop identified the number of homeless individuals enrolled in Medicaid who used the address of a food bank, shelter, or other support services location as their address, delineated by age group, gender, and county.

Telehealth: In FY 2016, Hilltop calculated the number of telehealth claims and encounters from January 2014 through September 2015 and produced monthly reports.

Pediatric Hospice Care Survey: To assist the Department in responding to a survey from the Medicaid Medical Directors Network (MMDN) regarding the provision of concurrent hospice services and regular Medicaid services for pediatric patients under age 21 with a terminal illness,

Hilltop calculated the number of pediatric hospice users who were enrolled in Medicaid for the years 2009 through 2015 and completed the corresponding survey questions.

Patient-Centered Medical Home Providers: Hilltop calculated the number of PCMH providers who claimed visits in CY 2014, delineated by the number of visits, the number of PCMH providers that had at least one visit in CY 2014, and the visit and recipient count for the 212 CareFirst PCMH providers who had 11 or more visits for dual-eligible beneficiaries in CY 2014.

Federally Qualified Health Centers: Hilltop calculated the number of children aged 0 to 18 years living in Baltimore City and Howard County who used a federally qualified health center (FQHC) for their services in FY 2015.

Gender Dysphoria: Hilltop identified the number of unique Medicaid enrollees with ICD-9 or ICD-10 diagnosis codes related to gender dysphoria in FY 2015 or FY 2016, delineated by FFS or MCO.

Data Analytics for Federal Grant Applications

Certified Community Behavioral Health Clinics Planning Grant: On April 1, 2014, the Protecting Access to Medicare Act of 2014 (H.R. 4302) was enacted. Section 223 of the Act authorized a demonstration program to enable certified community behavioral health clinics (CCBHCs) to test prospective payment systems (PPS). At the end of FY 2015, the Department requested that Hilltop assist with its application for a planning grant. Hilltop used financial planning data on the volume of services of Behavioral Health Administration providers it had previously collected to identify potential pilot sites, proposed a rate setting/PPS methodology, and wrote the corresponding sections of the proposal. The work continued into FY 2016. Hilltop worked with the Department to refine the PPS methodology and develop a plan to collect data and measure performance, wrote the corresponding sections of the proposal; and produced a visit enumeration list, which highlighted those codes that are reimbursable by the Department. Due to technical difficulties related to monitoring of provider services and payment, this project was put on hold.

Children's Health Insurance Program Reauthorization Act Grant: Hilltop conducted a number of analyses to assist the Department in applying to renew its Children's Health Insurance Program Reauthorization Act (CHIPRA) Connecting Kids to Coverage Outreach and Enrollment Cooperative Agreement with CMS. For the application, Hilltop identified the total number of individuals under age 19 as a percentage of the FPL, as well as the number of uninsured and insured, by county, by race, and by Hispanic or non-Hispanic ethnicity. Hilltop also provided a

letter of support detailing its partnership with the Department and its proposed analytic and program support for the project.

Data Management and Web-Accessible Databases

In its role as a business associate of the Department pursuant to the HIPAA Privacy Rule, Hilltop warehouses 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 eligibility, special program eligibility claims and encounters (hospital/physician/lab/NF, etc.), and provider information for the Maryland Medicaid program. Hilltop maintains Maryland Medicaid data back to 1991, receives updated 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 are FFS claims (medical, institutional, and pharmacy), MMIS eligibility, and encounter data. Hilltop receives and updates provider data quarterly. Hilltop processes more than 15 million Medicaid records each month, creating yearly databases in excess of 180 million records. The encounter database is the largest—with more than 150 million records—followed by the FFS database, which includes more than 50 million records and 500 variables processed annually. The national provider identifier (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 a uniform core standardized 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. Hilltop receives a monthly SQL database from FEi, Inc. containing a full backup of the *LTSSMaryland* reporting server back-end. This database contains information on program eligibility and participation, health assessments, and plans of care for Maryland Medicaid LTSS recipients. Hilltop receives monthly updates of *LTSSMaryland* data.

In FY 2016, 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 TBI Waivers; CFC, Community Personal Assistance Service (CPAS), Increased Community Service (ICS), and MFP programs; and reportable events (RE), quality survey, nurse monitoring, and In-Home Supports Assurance System (ISAS) claims processing. In FY 2016, requirements gathering began on several new modules, including Phase II of the MDC Waiver; contracted assessor module (to allow assessor agencies to conduct the interRAI assessment); electronic interRAI billing for the local health departments; importing client and provider files from MMIS; nurse monitoring assessment form modifications; changes to the RE module; and CFC and CPAS approval and denial letters. In addition, Hilltop assisted with sixteen trainings for MDC providers for Phase I and conducted extensive report replication testing. Hilltop continues to work with the Department to develop business processes, define system requirements, review use cases and report requirements, and conduct system trainings. In addition, Hilltop participates in the Change Control Workgroup to review system modification requests and to test modifications. Hilltop receives and maintains a regularly updated copy of the complete *LTSSMaryland* data set to use 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 will be used to adjust Medicaid nursing home payments under revisions to the state's current nursing home payment system. 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.

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 145,000 Medicaid recipients with dual Medicare coverage during CY 2002 through CY 2013.

Medical Care Database: In FY 2016, Hilltop began to provide Medicaid data to MHCC for the Medical Care Database (MCDB). In order to do this, it was necessary to enter into a data use agreement (DUA). Hilltop worked with the Department and provided consultation on the wording of the DUA that enabled Hilltop to give MHCC Medicaid data for the MCDB and for Hilltop in turn to receive a copy of the commercial and Medicare data from the MCDB for use in carrying out Medicaid analyses for the Department.

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 healthcare 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 Chronic Health Homes, implemented under an optional state plan amendment authorized by §2703 of the ACA.

Databases Developed and Maintained for the Department

Hilltop has developed several databases that it continued to maintain and update monthly for the Department, including but not limited to MCO encounters, MCO capitation, and FFS claims, provider, Medicaid eligibility, and health risk assessment (HRA). In addition, Hilltop continued to maintain and support previously developed database applications, including Early and Periodic Screening, Diagnosis, and Treatment (EPSDT) and REM.

Decision Support System: Hilltop continued to maintain the DSS for the Department. The DSS provides password-protected web-based access to 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 130 Department staff members are registered to use the DSS. In FY 2016, Hilltop continued to make improvements to the DSS and provide technical assistance to Department staff members using the system. Hilltop offered training to the Department via online tutorials and four classes held at Hilltop. Working with the Department, Hilltop made modifications to coverage group definitions and updated the ICD-10 diagnosis and procedure codes. Hilltop added Model and Community Pathways Waivers to the list of waivers; updated the waivers application to reflect the merger of the WOA and LAH Waiver to form the CO Waiver; and updated the community-based services application to include the CFC program. In addition, Hilltop updated the Coverage Group definition of CHIP on the DSS Resources page; upgraded both the database and web servers and upgraded software, moving to newer versions of ActiveX and SQL Server; and added new user IDs as needed.

Hilltop also continued to use WebFocus software, maintaining a Managed Reporting Environment (MRE), which is a user-friendly point-and-click graphical interface that accesses MMIS2 detail data and allows MMIS users to create reports, graphs, and compound reports or dashboards.

Maryland Medicaid eHealth Statistics: Hilltop continued to maintain Maryland Medicaid eHealth Statistics (http://www.md-medicaid.org/), a public website that provides a subset of the data available on the DSS. This site allows researchers, community leaders, practitioners, and the public at large to access Maryland Medicaid health statistics.

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 enrollee who had an immunization procedure during the period reported. These data provided demographic and other information on these individuals. Hilltop updates this database annually.

Data Requests

Throughout FY 2016, Hilltop's extensive data warehouse enabled it to fulfill hundreds of ad hoc data requests. These data requests supported policy and financial analyses conducted by the Department, Medicaid research and policy analysis conducted by external entities (with approval from the Department), and the numerous analyses and reports that Hilltop prepared during FY 2016 for the Department (see previous sections of this report). Exhibit 1 lists examples of data requests fulfilled for the Department and to support Hilltop analyses discussed in previous sections of this report. Exhibit 2 lists examples of data requests from external entities.

Exhibit 1
Selected Data Requests for Analyses Conducted by the Department and Hilltop, FY 2016

- Provided data for the annual HealthChoice evaluation.
- Provided data for the analysis of service utilization by beneficiaries who were enrolled in the Family Planning program.
- Provided data required to complete the annual Title V Block Grant Application.
- Provided the REM quarterly reports, which include data on costs, service utilization, a summary of the top 10 users based on cost overall and within each claim category, and REM recipients who do not have any claims reported during the quarter.
- Provided the REM annual trend data, including cost, enrollment, and utilization data from FY 2012 to FY 2014.
- Performed the preliminary (CY 2015) and final (CY 2014) ambulatory care VBP measures for enrollees with disabilities enrolled in HealthChoice.
- Performed the preliminary and final lead screening VBP measure for children enrolled in HealthChoice for CY 2014.
- Provided monthly reports on buprenorphine utilization data by Medicaid enrollees for the months spanning January 2010 through February 2016, as well as buprenorphine utilization data by county for Medicaid enrollees in specific months of FY 2016.
- Provided the following MFR data for CY 2014: lead testing, low birth-weight, asthma and diabetes avoidable admissions, and ambulatory care racial disparities.
- Provided SUD data for FYs 2012 through 2014. These data were sent to each MCO for the SUD pricing project.
- Performed an annual data analysis on dental service utilization by children, pregnant women, and adults enrolled in Medicaid.
- Provided data on the frequency of concussions experienced by children in Medicaid ages 6 to 18 years during CY 2014.
- Provided data on the use of prenatal care services and other health care utilization among women who had Medicaid-paid deliveries in CYs 2012 to 2014.
- Provided Medicaid dental billing data for CY 2014.

Exhibit 1
Selected Data Requests for Analyses Conducted by the Department and Hilltop, FY 2016

- Provided data to use in administering the 2014 CAHPS® satisfaction surveys to eligible HealthChoice enrollees.
- As part of the provider directory initiative, provided a random sample of PCPs participating in HealthChoice.
- Performed ongoing analyses of behavioral health service utilization by Medicaid enrollees for evaluating the integration of behavioral health services.
- Continued regular analysis of HSCRC data to estimate the number of Medicaid and non-Medicaid hospital discharges for the EHR incentive payment initiative.
- Provided data on enrollment duration and transitions between CHIP and Medicaid for CHIP Annual Report Template System (CARTS).
- Generated reports to describe the demographic characteristics and health care utilization and cost of participants enrolled in Medicaid Health Homes.
- Performed an analysis of six Healthcare Effective Data and Information Set (HEDIS) measures to generate baseline data for monitoring the care received by participants with behavioral health conditions.
- Calculated the total cost of care for all FFS and dual-eligible beneficiaries using data from CYs 2013 and 2014.
- Provided information for the REM and Model Waiver populations aged 24 and under on children having complex medical conditions in the state and costs associated with hospitalization for each child.
- Provided reports on MAPC users, services, and expenditures for FYs 2013 to 2015.
- Provided category of services information on the pre-post FFS Medicaid expenditures for new waiver enrollees for FYs 2011 to 2014.
- Provided data on the number of MFP participants in FY 2014 who were enrolled part of the year and the number who were enrolled the full year.
- Provided information on the use of private duty nursing (PDN) services in CYs 2014 and 2015, including the number of unique Medicaid recipients receiving PDN services in CY 2015 (by various demographics).

Exhibit 1
Selected Data Requests for Analyses Conducted by the Department and Hilltop, FY 2016

- Provided information on NF costs, non-NF costs, number of NF residents per month, and level of care information for FYs 2013 to 2015.
- Provided information on the use of Maryland chronic hospitals, including FFS chronic hospital expenditures and user counts for each fiscal year from FYs 2009 to 2013.
- Provided data on setting, type of service, and prior coverage group for newly enrolled waiver participants prior to enrolling in the Autism, Model, and MDC Waivers.
- Provided reports on the number of unduplicated users and Medicaid expenditures for individuals receiving Maryland Medicaid State Plan personal care services who were not enrolled in a waiver during the same fiscal year.

Exhibit 2
Selected Data Requests from External Entities
Approved by the Department and Fulfilled by Hilltop
FY 2016

- **Mathematica Policy Research:** Prepared quarterly Finder, Participation, and Services MFP reporting files for submission to Mathematica for the national program evaluation of MFP.
- **Delmarva:** Generated random sampling of participants and provided the Department and Delmarva with encounter data for those participants as part of the Healthy Kids project for CY 2015. Also provided a data set to Delmarva with a random sample of enrollees for Delmarva's annual HealthChoice managed care encounter validation report.
- **WBA Research/HealthcareData Company:** Prepared adult and child survey sample frames based on National Committee for Quality Assurance's 2015 specifications of HealthChoice-eligible recipients for the CAHPS® health plan survey. HealthcareData Company (HDC) audited source code and final sample frames. After receiving HDC approval, transmitted final adult and child sample frames to WBA Research, HDC, and the Department.
- **University of Maryland School of Social Work:** On behalf of the Department, provided multi-year claim and encounter data for Care Management Entity youth and control groups to the Institute for Innovation and Implementation at the University of Maryland School of Social Work to support the CHIPRA Quality Demonstration Grant.
- **Maryland Health Care Commission:** With approval from the Department, developed and tested CY 2013 Medicaid data files for inclusion in the MCDB, and constructed and tested summary cost and utilization measures. Also began reporting Medicaid data to the MCDB on behalf of the Department. Delivered two reports containing CY 2013 Medicaid data to MHCC.

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- **Care Management Technologies/Way Station:** Provided data, including monthly FFS claims, MCO encounters, and eligibility claims in 35 distinct files to Way Station on the number of Medicaid enrollees who received specified mental health services from 14 specific providers, including Way Station. Since June 2013, Hilltop has shadow priced the encounters for the 14 providers.
- **Maryland Health Care Commission:** Provided data for the PCMH project, including CYs 2014 and 2015 claims and encounters for Medicaid enrollees with a PCP in the study group for the PCMH evaluation. Hilltop asked HealthChoice MCOs to identify Medicaid enrollees assigned to specified PCP practices and to price encounters. Completed several follow-up data requests related to PCMH providers, specifically those providing services to dual-eligible beneficiaries. Generated service and expenditure reports, by provider and service type, for providers with 11 or more services to duals.
- **Optumas:** Transferred MMIS and dual-eligible Medicare data sets to Optumas for development of savings projections for Maryland's proposed ACO for dual-eligible beneficiaries. This actuarial analysis was required for the state's application to the federal government for a SIM award.

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