Hawai‘i State Innovation Model

Return on Investment Analysis

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1. Background

The State of Hawai'i is unique in terms of geographic and social demographics, both of which greatly affect the healthcare delivery system within the State. Each of the eight islands that make up the State of Hawai'i has unique socio-economic classes, ethnic compositions, and geographic landscapes that result in health care disparities across the State. These social, economic, and geographic differences also result in an unequal distribution of providers among the islands, which, in turn, results in shortages of providers and disparities in quality and access to health care for some islands. The high prevalence of mild to moderate behavioral health conditions in Hawai'i is a public health issue that is becoming an increasing financial burden to the state due to the lack of detection, assessment, and interventions which affects both the mental and physical health of families and the community. Integrating behavioral and physical health care can result in an approach to health care that focuses on the whole person, mind and body, and could contribute to eliminating disparities within Hawai'i's healthcare system.

The State of Hawai'i was awarded two State Innovation Model (SIM) awards from the Center for Medicare and Medicaid Innovation (CMMI) to help pave the way for transformation within the state's healthcare system and work towards improving the care provided to its diverse population. The Round Two Model Design received in February 2015 enabled the State to develop the framework for achieving the goal of improving the Hawai'i healthcare system by focusing on addressing gaps in the system surrounding awareness, diagnosis, and treatment of behavioral health conditions across the State. In particular, the three main goals Hawai'i is working towards achieving are: increasing access to and utilization of behavioral health services, increasing the use of evidence-based behavioral health practices in primary care and women's health settings, and strengthening the health care delivery system to support Behavioral Health Integration (BHI).

By focusing on behavioral health integration delivery and payment models, the State of Hawai'i is not only working towards achieving the Triple Aim of better health, better care, and reduced costs, but also the goal of reducing health care disparities across the island state. The three main behavioral health intervention strategies that the State plans on incorporating as a result of the SIM planning efforts are:

1. Screening for depression and anxiety,
2. Screening, Brief Intervention, and Referral for Treatment (SBIRT) for substance misuse, and
3. Motivational Interviewing.

These screenings will target the individuals with unidentified mild to moderate behavioral health conditions that currently reside in the healthcare system.

The State of Hawai'i contracted with Navigant Consulting, which turned to **Optumas**, an actuarial consulting firm, to perform a five-year Return on Investment (ROI) analysis estimating the costs of implementing screening for depression and anxiety, SBIRT, and motivational interviewing, while identifying the potential savings associated with introducing these services into the healthcare system. The current strategy outlined in the Hawai'i State Health Innovation Plan (SHIP) focuses on the integration of behavioral health within primary and women's health care for Hawai'i's Medicaid and Children's Health Insurance Program (CHIP) beneficiaries. Planning is expected to continue throughout 2016 and implementation in Hawai'i's Medicaid program, Med-QUEST, is expected to begin in calendar year 2017.

The goal of Hawai'i's Behavioral Health Integration (BHI) initiative is to help identify and better treat patients with mild to moderate behavioral health conditions in the primary care setting and facilitate the timely referral of patients with more serious conditions to a behavioral health specialist. By integrating behavioral health practices into the primary care setting, Hawai'i aims to increase the utilization of community-based behavioral health services, reduce the utilization of avoidable hospitalizations, readmissions, and emergency room visits, improve outcomes for persons with comorbid behavioral health and chronic conditions, and improve overall health status in Hawai'i.

The remainder of this report describes in more detail the three behavioral health interventions that the State of Hawai'i will begin implementing in the Med-QUEST program and summarizes the methodology used for the development of the ROI analysis.

2. Intervention Assumptions

The State of Hawai'i plans on encouraging primary care and women's health providers to begin including the three evidence-based behavioral health integration practices within their workplaces to strengthen the health care delivery system to support behavioral health integration. Participation by providers is entirely voluntary, and each participating provider can choose all or a subset of patients to target and which of the interventions to include in their practice. However, Hawai'i recommends following certain models when incorporating in the primary care practices. A brief description of each of the evidence-based BHI practices recommended by the State of Hawai'i is provided in Table 1 below:

Table 1: Behavioral Health Integration Practices

BHI Practice	Description
Screening for Depression and Anxiety	Recommends an approach based on the IMPACT model to identify and treat mild-to-moderate depression and anxiety in a primary care practice setting. The IMPACT model provides implementation recommendations, screening tools, medication management, and other useful guides for incorporating screening into primary care practices.
SBIRT Screening for Substance Misuse	Screening, Brief Intervention, and Referral to Treatment (SBIRT) is a systematic approach to provide brief interventions and referrals for individuals with risky substance use behavior. SBIRT involves screening with scored feedback, expressing non-judgmental clinical concern and advice, accompanied with helpful resources should the need arise.
Motivational Interviewing	Motivational Interviewing is a patient-centered approach to providing care in which the caregiver talks with patients to educate and encourage healthy practices and provide motivation for change. This goal-oriented practice focuses on patient engagement in order to develop lasting lifestyle changes.

Optumas worked with the Hawai'i Office of the Governor and Navigant Consulting to understand how the above BHI practices would be incorporated into the Med-QUEST healthcare delivery system. Although participating providers decide which populations to screen and provide these services to, the Hawai'i SHIP recommends that practices focus on the following populations:

- Adolescents age 12-21
- Adults age 21+
- Pregnant Women
- Women of child bearing age

Due to the voluntary participation of the BHI practices, the uptake of the evidence-based practices within the primary care and women's health settings in the first few years of the behavioral health integration plan will likely be low. The State anticipates initially that a small percentage of primary care practices will choose to participate in the BHI models. It is assumed that these participants in the early years will become "practice champions" who will lead the integration process and facilitate the implementation efforts among other primary care providers. A provider who decides to participate is not required to incorporate all of the integration models into their practice and can decide upon which patients to focus. For example, a provider may decide to conduct depression/anxiety screening only for their patients with chronic conditions, or may decide to screen all patients annually while not incorporating SBIRT or Motivational Interviewing into their practice.

To help mitigate the slow uptake and other barriers to integrated care, the State is considering offering Pay for Performance incentives that are based on BHI participation or behavioral health outcomes. Provider training and support will be crucial to achieving care integration statewide as well as developing a sustainable behavioral health integration model. However, at the time of the analysis, these provider incentives and support system were not fully developed so the costs of provider support/training as well as financial incentives other than direct costs of providing services were not included in the ROI analysis.

Incorporating each of the behavioral health integration models into primary care practices will affect service utilization patterns. The assumed impact on service utilization for each of the integration practices is as follows:

- *Depression/anxiety screening* will lead to an increase in utilization for screening procedure codes as well as a corresponding increase in pharmacy costs and utilization of outpatient therapy and professional counseling for patients who are referred to a behavioral health specialist.
- *SBIRT* will lead to an increase in utilization of screening and brief intervention procedure codes, and a corresponding increase in inpatient and outpatient substance abuse treatment utilization.
- *Motivational Interviewing* was not assumed to have any associated direct costs, since it is considered a patient-centered practice promoting positive behavior changes to support a healthier lifestyle. This technique could increase the average visit length as providers spend more time engaging with patients, but could decrease the frequency of future visits as patients better manage their health behaviors and improve outcomes.

The interventions and their associated impacts on utilization patterns within the Hawai‘i Medicaid program are key assumptions in the ROI analysis and are discussed in further detail in the Methodology Section of the report. To estimate the impact of incorporating these BHI practices within the Hawai‘i Medicaid program, **Optumas** used Hawai‘i Medicaid-specific base data to determine a baseline for intervention projections.

3. Base Data

The State of Hawai‘i provided JEN Associates, also a Navigant SIM subcontractor, statewide Medicaid Managed Care encounters and eligibility data for the FY2013 – FY2015 time periods to use as the base data for the ROI analysis. After detailed data validation efforts, JEN Associates transferred the data to **Optumas** which then conducted internal data validation analyses such as:

1. Referential Integrity Checks – ensured that all encounters included in the base data were incurred by a member with valid Medicaid eligibility that coincided with the incurred date associated with the specific encounter.

2. Volume Checks – **Optumas** checked both volume of encounters and total expenditures by major category of service (e.g., Inpatient, Outpatient, Professional) by looking at totals longitudinally. This ensured that any gaps or spikes in the data were identified and addressed when creating the base data used for projections.

Once the data validation process was completed, **Optumas** developed categories of aid (COA) to group traditional Medicaid beneficiaries into similar cohorts. The purpose of categories of aid is to create credible and homogenous cohorts that group individual members with similar risk profiles into a single category to facilitate comparing expenditures and service utilization between different cohorts. The major categories of aid used to group the target Medicaid populations into similar risk cohorts are shown below in Table 2.

Table 2: Population COAs

Categories of Aid (COA)	Description
ABD Duals	Aged, Blind, and Disabled (ABD) members with disabilities who are covered by both Medicaid and Medicare.
ABD 21+	Aged, Blind, and Disabled (ABD) members 21 years of age or older.
ABD <21	Aged, Blind, and Disabled (ABD) members younger than 21 years of age.
CHIP	Children covered under the Children's Health Insurance Program (CHIP).
Foster Care <21	Children less than 21 years old who are involved with child welfare agencies.
Foster Care 21+	Members 21 years or older who are involved with child welfare agencies.
Pregnant Women	Women identified in the Eligibility file with a positive Pregnancy Indicator.
TANF <21	Low-income children below 21 years of age receiving Temporary Assistance for Needy Families (TANF) coverage.
TANF 21+	Low-income adults 21 years of age or older receiving Temporary Assistance for Needy Families (TANF) coverage.

Medical services were aggregated by the major categories of service (COS) shown in Table 3 in order to develop a detailed data book which summarizes the service utilization and costs for each of the Medicaid populations. Each encounter was identified as only one category of service listed below based on a hierarchical approach to reduce the possibility of introducing service mix which can skew the base data utilization amounts. Base data units consist of claim counts for each COS, with the exception of Inpatient and Pharmacy categories which are summarized by days and prescriptions, respectively.

Table 3: Service Categories

Categories of Service (COS)	Description
Behavioral Health - IP	Behavioral Health Inpatient Services
Behavioral Health - OP	Behavioral Health Outpatient Services
Behavioral Health - Prof	Behavioral Health Professional Services
DME/Supplies	Durable Medical Equipment
ER	Emergency Room Services
FQHC/RHC	Federally-Qualified Health Center/Rural Health Clinic
Hospice/Home Health	Hospice and Home Health services
IP	Inpatient Services
Lab/Rad	Laboratory and Radiological Services
OP	Outpatient Services other than ER
Other	All other services that do not explicitly fall into another COS listed
Other Professional	Professional Services not included in PCP and Specialist categories
PCP	Primary Care Provider Services
Rx	Pharmacy Prescriptions
Specialist	Specialist Services
Transportation	Emergency and Non-Emergency Transportation Services

Each year of the base data was summarized by COA and COS. The total per member per month (PMPM) costs and utilization patterns for each year were benchmarked against other Medicaid programs as a reasonableness check. When summarizing the base data encounters, **Optumas** identified members who used behavioral health services at least once (BH utilizers) within each fiscal year and separated the costs and utilization for these members from the non-behavioral health utilizers (non-BH utilizers). Separating these members provided key insight into the differences in cost and utilization distribution among the major categories of service for BH utilizers and non-BH utilizers. The prevalence of BH utilizers by category of aid within FY14 and FY15 membership is shown in Table 4 below. The distribution of BH utilizers is very consistent over the two-year period. The higher prevalence of BH utilizers within the Aged, Blind, and Disabled (ABD) cohorts and Foster Care populations appeared reasonable because these populations typically suffer from more chronic diseases and endure hardships in life, which may cause behavioral health conditions.

Table 4: Prevalence of BH Utilizers

	% BH Utilizers	
COA	FY14	FY15
ABD Duals	28.7%	27.6%
ABD 21+	45.9%	44.4%
ABD <21	29.0%	28.7%
CHIP	5.5%	5.8%
Foster Care <21	25.9%	25.1%
Foster Care 21+	32.4%	29.2%
Pregnant Women	11.3%	10.8%
TANF <21	5.3%	5.8%
TANF 21+	22.5%	21.2%
Total	16.1%	16.2%

Once the FY14 and FY15 base data was summarized by category of aid and category of service for the BH-utilizers and non-BH utilizers, additional adjustments were made to develop an adjusted base data set to be used for prospective ROI analysis. The base data adjustments include an estimate for the incurred but not yet reported (IBNR) expenditures within the FY15 base data to account for any claims that were incurred within the base data time period, but have yet to be paid. The FY14 base data was considered complete, since there was over 12 months of runout, so no IBNR adjustment was made to the FY14 data.

Additionally, during the data validation process, **Optumas** identified an unexplained spike in units and costs for pharmacy prescriptions for the second half of FY15. After discussions with JEN Associates and the State of Hawai'i, it was determined that these costs were a result of an unexpected data anomaly that should be excluded from the base data. **Optumas** made a downward adjustment to the Pharmacy category of service for all cohorts to account for this issue and ensure that costs and utilization patterns were more in line with the previous years of base data.

After reviewing the cost and utilization patterns by COA and COS over time for the FY13-FY15 data, **Optumas** decided to use the FY14 and FY15 data as the final base data and exclude FY13 data. The FY13 data was used for benchmarking purposes, however, the final decision was to use an equal blend of the FY14 and FY15 data to incorporate more recent information. Additionally, because Hawai'i adopted Medicaid expansion, the higher levels of enrollment created more credible populations for the FY14 and FY15 time periods. The blended FY14 and FY15 base data, summarized by COA, for the non-BH utilizers and BH utilizers are shown in Table 5 and Table 6 respectively. Aggregate member months (MMs) for the FY15 time period were used to calculate per member per month (PMPM) costs. Utilization per thousand members (Util/K) represents the total service units that one thousand members use within a year, while unit cost represents the average cost of one service unit. As previously mentioned,

units for each COS represent number of claims, with the exception of the Inpatient (IP) and Pharmacy (Rx) categories, which are based on number of days and prescriptions, respectively.

Table 5: Blended Base Date by COA- Non-BH Utilizers

	FY14-15 Blended Base Data - Non-BH Utilizers			
COA	FY15 MMs	Util/K	Unit Cost	PMPM
ABD Duals	279,039	27,189	$105.62	$239.31
ABD 21+	97,582	53,662	$184.45	$824.83
ABD <21	22,338	32,145	$453.94	$1,215.98
CHIP	286,145	8,327	$89.49	$62.10
Foster Care <21	49,291	8,733	$111.82	$81.38
Foster Care 21+	2,590	10,244	$158.36	$135.19
Pregnant Women	31,224	23,892	$250.50	$498.74
TANF <21	1,278,150	9,594	$130.73	$104.52
TANF 21+	1,097,436	17,978	$135.85	$203.53
Total	**3,143,795**	**15,624**	**$139.03**	**$181.02**

Table 6: Blended Base Data by COA – BH Utilizers

	FY14-FY15 Blended Base Data - BH Utilizers			
COA	MMs	Util/K	Unit Cost	PMPM
ABD Duals	106,328	43,114	$116.70	$419.28
ABD 21+	77,783	83,044	$185.33	$1,282.52
ABD <21	8,984	52,402	$465.56	$2,033.05
CHIP	17,593	23,107	$130.94	$252.14
Foster Care <21	16,539	30,902	$127.88	$329.32
Foster Care 21+	1,069	33,675	$150.09	$421.20
Pregnant Women	3,781	48,015	$203.67	$814.94
TANF <21	78,153	23,704	$198.64	$392.38
TANF 21+	295,817	49,485	$155.33	$640.54
Total	**606,047**	**48,083**	**$163.14**	**$653.69**

The average PMPM for members using behavioral health services is approximately 3.6 times the average total healthcare cost for members who are not behavioral health utilizers. The differential varies by cohort, with the ABD population having a lower difference due to their higher physical health costs, while the healthier Children and the TANF populations have a much larger cost differential between BH-utilizers and non-BH utilizers because of the relatively low physical health needs. The aggregate utilization and costs by major category of service are shown in Tables 7 and 8 below. Approximately 21% of the total costs for BH utilizers are attributed to Behavioral Health services. Members who use behavioral health services use approximately 2-3 times as many services across all categories of service. In particular, increased pharmacy drug utilization as well as higher unit costs for prescriptions is one of the main drivers in the cost differentials between BH utilizers and non-BH utilizers.

Table 7: Blended Base Data by COS – Non-BH Utilizers

	FY14-FY15 Blended Base Data - Non-BH Utilizers			
COS	FY15 MMs	Util/K	Unit Cost	PMPM
Behavioral Health - IP	3,143,795	-	$0.00	$0.00
Behavioral Health - OP	3,143,795	-	$0.00	$0.00
Behavioral Health - Prof	3,143,795	-	$0.00	$0.00
DME/Supplies	3,143,795	305	$156.05	$3.97
ER	3,143,795	894	$203.15	$15.14
FQHC/RHC	3,143,795	80	$149.33	$1.00
Hospice/Home Health	3,143,795	223	$471.60	$8.78
IP	3,143,795	295	$1,883.91	$46.26
Lab/Rad	3,143,795	997	$74.21	$6.17
OP	3,143,795	94	$1,042.36	$8.19
Other	3,143,795	156	$649.40	$8.46
Other Professional	3,143,795	512	$117.28	$5.00
PCP	3,143,795	2,498	$80.86	$16.83
Rx	3,143,795	7,265	$66.58	$40.31
Specialist	3,143,795	2,151	$108.02	$19.36
Transportation	3,143,795	153	$121.34	$1.55
Total	**3,143,795**	**15,624**	**$139.03**	**$181.02**

Table 8: Blended Base Data by COS – BH Utilizers

	FY14-FY15 Blended Base Data - BH Utilizers			
COS	FY15 MMs	Util/K	Unit Cost	PMPM
Behavioral Health - IP	606,047	424	$1,032.83	$36.45
Behavioral Health - OP	606,047	730	$491.69	$29.90
Behavioral Health - Prof	606,047	8,874	$95.77	$70.82
DME/Supplies	606,047	778	$159.27	$10.33
ER	606,047	2,918	$186.66	$45.39
FQHC/RHC	606,047	286	$146.23	$3.48
Hospice/Home Health	606,047	600	$438.51	$21.93
IP	606,047	875	$1,793.62	$130.79
Lab/Rad	606,047	2,085	$85.43	$14.84
OP	606,047	152	$1,161.50	$14.73
Other	606,047	606	$643.64	$32.48
Other Professional	606,047	1,298	$109.80	$11.87
PCP	606,047	4,435	$76.95	$28.44
Rx	606,047	18,499	$98.93	$152.52
Specialist	606,047	4,986	$101.69	$42.25
Transportation	606,047	538	$166.33	$7.46
Total	**606,047**	**48,083**	**$163.14**	**$653.69**

After blending the FY14 and FY15 data together, **Optumas** had the final base data from which to base projections. The methodology behind the cost of the three interventions, trend projections, and estimated savings for the ROI analysis are described in the following section.

4. Methodology

After finalizing the FY14-FY15 blended base data, **Optumas** developed trend factors to account for the forecasted change in utilization (frequency of services) and unit costs (pure price change, technology, acuity/intensity, and mix of services) from the base data to each year of the five-year projection period beginning in CY17. The FY13 through FY15 data was used to develop trend factors on an annualized basis. These factors were applied by the major categories of service and major category of aid (ABD, Children, Foster Care, and Family). When projecting costs and utilization, the midpoint of the blended base data (6/30/2014) to the midpoint of each year within the five-year ROI analysis was used.

Trend was reviewed and developed separately by utilization and unit cost. Trend development utilizes historical data along with consideration for relevant external factors that may have impacted changes in utilization or unit cost. The historical monthly data is smoothed by using 12 month rolling averages, so each month of data reviewed for trend development consists of the previous 12 months combined (e.g. the data point for December 2014 represents January 2014 – December 2014). This smooths out data volatility and allows for an analysis of the rate of growth in utilization and unit cost over time.

Trend smoothing was conducted based on review of the data-based trends. In the event that the data suggested large negative trends, the negative trends were not projected into the contract period, as it does not seem appropriate that these negative patterns would continue in the future. Rather it is more likely that the empirical calculation is skewed due to external influences on the utilization/unit cost that are skewing/overshadowing the true secular trend. When large variability in trends was observed, the data was smoothed before projecting. Various factors were considered in the smoothing process, including trends observed in similar Medicaid programs for similar demographics and service categories.

The projected annual trend assumptions by the aggregate cohorts and major COS are shown below in Table 9.

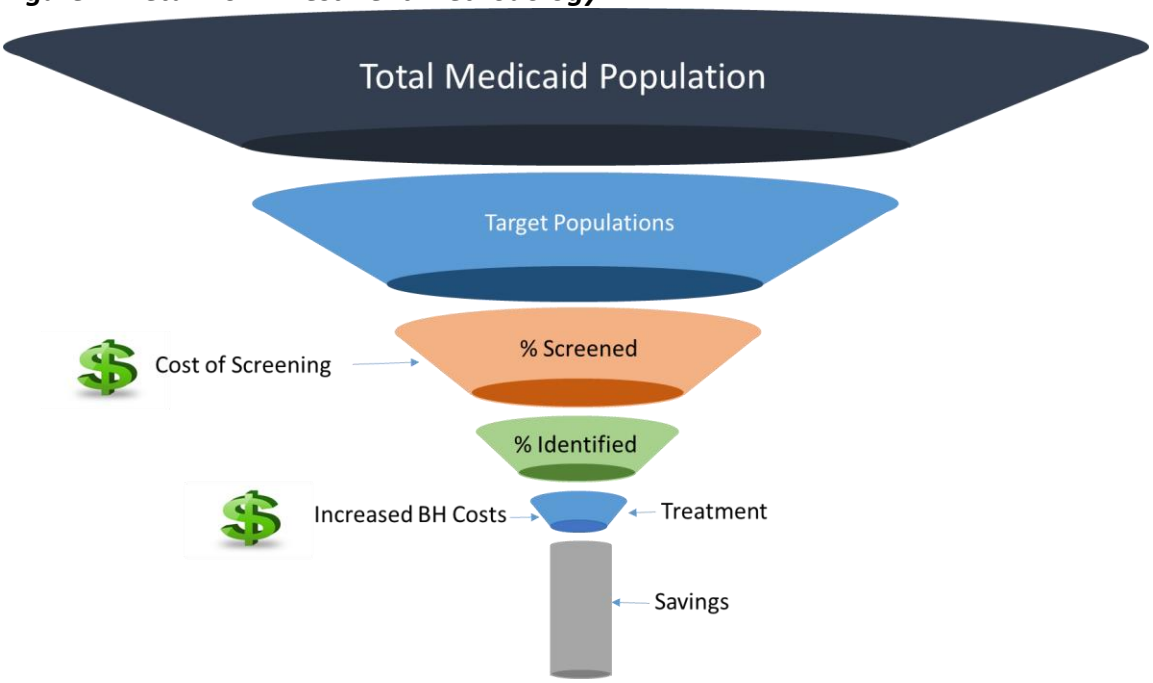
Table 9: Annual PMPM Projection Trends

	Annual PMPM Trend			
COS	ABD	Children	Foster Care	Family
Behavioral Health - IP	0.0%	0.0%	1.0%	0.0%
Behavioral Health - OP	0.0%	0.8%	2.0%	1.0%
Behavioral Health - Prof	0.0%	0.5%	1.3%	0.2%
DME/Supplies	0.0%	2.0%	0.0%	2.0%
ER	0.2%	0.0%	0.0%	0.2%
FQHC/RHC	0.2%	2.0%	2.0%	2.0%
Hospice/Home Health	0.0%	0.0%	0.0%	0.0%
IP	1.0%	2.0%	2.0%	1.0%
Lab/Rad	0.8%	1.0%	2.0%	1.3%
OP	1.3%	1.0%	2.0%	0.2%
Other	0.0%	1.0%	2.0%	1.3%
Other Professional	0.0%	1.0%	1.0%	1.0%
PCP	0.2%	0.5%	1.5%	2.0%
Rx	5.6%	3.3%	0.5%	2.3%
Specialist	0.5%	1.3%	1.5%	0.0%
Transportation	0.0%	1.0%	1.5%	0.5%

The trend factors shown above were used to project Hawai'i program costs for both the BH utilizers and non-BH utilizers within the base data. Two projections were made in order to develop the ROI analysis. The first projection trended forward costs for the total Medicaid population assuming no BHI interventions would be included in the system. These projected costs were used as the baseline for determining the potential savings that could result from the interventions. The second projection is the trended base data costs, along with the interventions and their associated impacts on the behavioral health and acute care services. The difference between these projections, net of intervention costs, is the assumed "savings" that result from the inclusion of these evidence-based BHI practices within Med-QUEST.

Figure 1 below displays a visual to explain and illustrate the process that **Optumas** used to calculate the potential savings for current non-BH utilizers that would be identified as having mild-to-moderate BH needs and receiving treatment as a result of the interventions. The funnel consists of six levels; as one moves towards the lower levels of the diagram, the number of members that may benefit from these BHI practices grows smaller.

Figure 1: Return on Investment Methodology



The first layer of the funnel represents the Hawai'i Medicaid population that are non-BH utilizers; the base population for the ROI analysis. The second level represents the target population who may benefit from the screenings and intervention tactics. Primary care providers are expected to focus on the Pregnant Women and ABD populations in particular because they tend to be more susceptible to chronic/co-morbid conditions. **Optumas** consulted with our Medical Director and relied on Behavioral Health prevalence estimates from the Hawai'i SHIP when estimating which portion of the population may benefit from these behavioral health interventions (i.e., target population). These assumptions are displayed in Table 10 below.

Table 10: Percent of Members Assumed to Benefit from Interventions

COA	FY15 Non-BH MMs	% Considered Target Population
ABD Duals	279,039	20%
ABD 21+	97,582	20%
ABD <21	22,338	20%
CHIP	286,145	0%
Foster Care <21	49,291	5%
Foster Care 21+	2,590	10%
Pregnant Women	31,224	40%
TANF <21	1,278,150	5%
TANF 21+	1,097,436	5%

The third level of the funnel illustrates the percent of the population that will be screened and displays the first encounter of costs that are incurred as a result of these interventions. Since the behavioral health integration practices are completely voluntary, **Optumas** assumed that there would be low uptake by the providers incorporating these models into their practices in the early years of the analysis so screening rates would be fairly low within the initial years.

Optumas estimated the cost of the interventions by researching Medicaid reimbursement and behavioral health prevalence information within Hawai'i. For SBIRT reimbursement, **Optumas** relied on average cost information for CPT codes H0049, H0050, 99408, 99409, and 99420. The final unit cost used for projecting SBIRT services was $24.00 in CY17 for the initial screening and $30.00 for intervention/referral services, with the unit cost assumption increasing 0.5% for each projection year after CY17 to provide some variation for the service cost.

A similar approach was used for estimating how much the Screening for Depression/Anxiety would cost to add within the Med-QUEST program. Reimbursement amounts for CPT codes 96127 and 96110 were used for the Depression/Anxiety Screening, which ranged from an assumed reimbursement of $7.02 in CY17 to $7.30 in the fifth year of projection.

It is important to note that while explicit cost assumptions per unit for the interventions are included in the return on investment model, Med-QUEST does not pay for each service directly, as fee-for-service payments, because the Hawai'i Medicaid system operates under capitation payments. Nevertheless, the capitation rates in effect during the projection period will need to include additional costs for these interventions. To the extent that the actual SBIRT and depression/anxiety screening reimbursement rates vary from the estimates used within the model, additional costs or savings may result.

When estimating the cost of providing SBIRT services to Medicaid beneficiaries within Hawai'i's Med-QUEST program, **Optumas** made assumptions on the uptake of on the screenings by providers and relied on the prevalence of alcoholism within Hawai'i to estimate how many members would receive Brief Interventions and/or referrals for further BH treatment. In particular, **Optumas** assumed that approximately 5-30% of members would be provided with the Screening portion of the SBIRT model over the five-year period, with the percent of members screened varying by population and year. Depression/Anxiety Screenings were assumed to be given in a widespread manner, with an emphasis on targeting Pregnant Women. The percent of population screened for depression/anxiety varied by cohort from 5%-10% in CY17 up to 35-60% in CY21. The PMPMs associated with SBIRT and Screening for Depression/Anxiety that were added to the PCP category of service for the Non-BH Utilizers within each projection year are shown in Table 11 below. Since Motivational Interviewing is a practice change rather than a service with reimbursement linked to utilization, no explicit costs for Motivational Interviewing were included in the projection.

Table 11: Behavioral Health Intervention PMPMs – Non-BH Utilizers

COA	FY15 MMs	CY17	CY18	CY19	CY20	CY21
ABD Duals	279,039	$0.22	$0.30	$0.52	$0.76	$0.99
ABD 21+	97,582	$0.22	$0.30	$0.52	$0.76	$0.99
ABD <21	22,338	$0.18	$0.26	$0.29	$0.33	$0.37
CHIP	286,145	$0.16	$0.23	$0.27	$0.31	$0.35
Foster Care <21	49,291	$0.19	$0.26	$0.45	$0.64	$0.83
Foster Care 21+	2,590	$0.21	$0.25	$0.51	$0.73	$0.95
Pregnant Women	31,224	$0.39	$0.49	$0.74	$0.99	$1.42
TANF <21	1,278,150	$0.18	$0.21	$0.40	$0.58	$0.76
TANF 21+	1,097,436	$0.21	$0.25	$0.47	$0.69	$0.92
Total	**3,143,795**	**$0.19**	**$0.24**	**$0.43**	**$0.62**	**$0.81**

The fourth section of the diagram represents the percent of members who are screened positive as requiring additional follow-up for behavioral health services. It is expected that the number of members who are identified will increase each year because more providers will adopt the voluntary screening process, resulting in a larger number of members screened and identified as having behavioral health conditions. Of the members who would be screened for SBIRT, it was estimated that approximately 5-25% would screen as positive and also receive a Brief Intervention session with their provider in a given year. The prevalence of alcoholism in Hawai'i for each cohort, discussed in the Hawai'i SHIP, was used to estimate the percent of members who would go on to receive the "Referral to Treatment" portion of SBIRT. In the model, approximately 15-35% of members were assumed to screen positive for mild-to-moderate depression/anxiety that require additional services.

The second cost encountered as a result of these interventions is shown in the fifth layer of the funnel as the portion of the members who would be identified as having a mild-to-moderate behavioral health condition who will be referred for BH treatment. The members who would go on to receive behavioral health treatments were estimated assuming that of those identified as needing BH services, only approximately 25-45% would go on to receive treatment due to the behavioral health provider shortages and geographical disparities among the islands of Hawai'i. The members are assumed to receive treatment in the Behavioral Health Inpatient, Outpatient, and Professional settings as well as incur additional Pharmacy costs, with a larger emphasis on the Professional services.

The final number of members from the Non-BH Utilizer population who will go on to receive behavioral health treatments as a result of SBIRT and Depression/Anxiety Screening was estimated by multiplying the FY15 membership by the behavioral health prevalence and screening uptake assumptions outlined above. By using the blended base data BH utilizer's PMPMs by COA and COS as a proxy, additional dollars associated with the new utilizers that will be identified as a result of the BH Integration models were estimated and included in the

model. These members are assumed to begin using BH services and Pharmacy prescriptions as a result of the screenings received in the primary care setting.

The final cylinder at the bottom of the funnel diagram represents the acute care savings that could be realized by members who are identified as having mild-to-moderate BH conditions and go on to receive the appropriate treatment. Savings on physical health services by these members were assumed to begin after 9-18 months. Thus no assumed savings on the physical health categories of service are present until the second year of the projection. It is assumed that these members will have decreased utilization in the Inpatient, Outpatient, and Emergency Room settings as a result of receiving behavioral health treatment. After discussions with **Optumas'** Medical Director, it was estimated that members who go through the appropriate BH treatments will see up to 20% savings on their physical health costs for subsequent years, based on the clinician's professional judgment. The following section discusses the ROI projection results in further detail.

5. Return on Investment (ROI)

For each year of the five-year projection period, the blended base data costs were trended forward and the cost of the BHI practices were added. The members currently classified as non-BH utilizers who were assumed to be identified though the screening interventions as having mild-to-moderate BH conditions were modeled with a decrease in utilization on their physical health acute care IP, OP, and ER services and a corresponding increase in utilization of Behavioral Health services, with a particular emphasis on the Behavioral Health – Professional category. The costs of the BH Utilizers from the blended FY14-FY15 base data were used to estimate the additional service costs for these newly identified members in need of BH services.

The blended base data costs were trended forward through the five-year projection period both with and without the BH interventions and their associated impacts to determine the potential savings generated from incorporating the BHI models into primary care practices. Tables 12 and 13 show the total population PMPMs (including both BH Utilizers and Non-BH Utilizers) by cohort for each year of the projection period, without the interventions and with the three BHI practice interventions, respectively.

Table 12: Projected PMPMs – No Interventions

	Aggregate Program PMPMs – No Interventions					
COA	FY15 MMs	CY17	CY18	CY19	CY20	CY21
ABD Duals	385,367	$292.66	$293.98	$295.35	$296.78	$298.27
ABD 21+	175,365	$1,098.44	$1,124.21	$1,151.23	$1,179.61	$1,209.37
ABD <21	31,322	$1,507.98	$1,528.62	$1,550.07	$1,572.38	$1,595.58
CHIP	303,738	$76.47	$77.64	$78.84	$80.07	$81.33
Foster Care <21	65,830	$148.25	$149.82	$151.41	$153.02	$154.66
Foster Care 21+	3,659	$227.08	$229.95	$232.86	$235.83	$238.84
Pregnant Women	35,005	$558.18	$566.91	$575.81	$584.88	$594.13
TANF <21	1,356,303	$125.17	$126.56	$127.98	$129.42	$130.89
TANF 21+	1,393,253	$332.15	$346.16	$361.39	$377.98	$396.05
Total	**3,749,842**	**$276.95**	**$284.38**	**$292.35**	**$300.91**	**$310.11**

Table 13: Projected PMPMs – With Interventions

	Aggregate Program PMPMs – With Interventions					
COA	FY15 MMs	CY17	CY18	CY19	CY20	CY21
ABD Duals	385,367	$292.83	$294.28	$295.94	$297.72	$299.64
ABD 21+	175,365	$1,098.62	$1,124.63	$1,152.11	$1,181.08	$1,211.63
ABD <21	31,322	$1,508.16	$1,528.99	$1,550.60	$1,573.01	$1,596.27
CHIP	303,738	$76.62	$77.86	$79.09	$80.36	$81.66
Foster Care <21	65,830	$148.40	$150.06	$151.86	$153.73	$155.67
Foster Care 21+	3,659	$227.25	$230.18	$233.37	$236.65	$240.03
Pregnant Women	35,005	$558.65	$567.61	$576.80	$585.93	$594.73
TANF <21	1,356,303	$125.34	$126.79	$128.41	$130.08	$131.81
TANF 21+	1,393,253	$332.33	$346.40	$361.86	$378.73	$397.13
Total	**3,749,842**	**$277.13**	**$284.64**	**$292.82**	**$301.65**	**$311.15**

Table 14 shows the return on investment summary in terms of aggregate costs for the Med-QUEST program, while Table 15 shows the information on a PMPM basis. The "Investment" portion of the ROI Summary represents the direct costs of providing the SBIRT and Screening for Depression/Anxiety assessments. No additional start-up costs (e.g., training), triage service costs, or provider incentives were included in the ROI calculation since these program costs and payment methods were still under discussion/undetermined at the time of the analysis. The "ROI" section of Tables 14 and 15 represents the difference between projected Medicaid costs if the interventions did not take place (i.e., only trending forward the base data each year) and the projected costs if they did occur, as well as the assumed impact of the BH interventions on

service utilization, net of intervention service costs. The impact of these interventions results in additional costs related to increased utilization for Behavioral Health services resulting in a negative return on investment.

Table 14: ROI Summary – Total Costs

	ROI Summary – Total Costs					
Description	CY17	CY18	CY19	CY20	CY21	Total
Cost of Assessments related to Interventions	$608,507	$762,841	$1,350,359	$1,944,784	$2,551,770	$7,218,261
Additional Cost related to Increased Behavioral Health Services[1]	$55,877	$192,903	$435,959	$814,445	$1,334,416	$2,833,599
ROI	**-9%**	**-25%**	**-32%**	**-42%**	**-52%**	**-39%**

[1]Reflects total additional costs related to the increased utilization of Behavioral Health services, net of the corresponding decrease in utilization of Physical Health services.

Table 15: ROI Summary – PMPM

		ROI Summary - PMPM					
Description	FY15 MMs	CY17	CY18	CY19	CY20	CY21	Total
Cost of Assessments related to Interventions	3,749,842	$0.16	$0.20	$0.36	$0.52	$0.68	$1.92
Additional Cost related to Increased Behavioral Health Services[1]	3,749,842	$0.01	$0.05	$0.12	$0.22	$0.36	$0.76
Total Costs PMPM	3,749,842	$0.18	$0.25	$0.48	$0.74	$1.04	$2.68
ROI		**-9%**	**-25%**	**-32%**	**-42%**	**-52%**	**-39%**

[1]Reflects total additional costs related to the increased utilization of Behavioral Health services, net of the corresponding decrease in utilization of Physical Health services.

The negative projected return in each year indicates that the costs of these interventions and the assumed increase in behavioral health services as a result of more members being identified with mild-to-moderate behavioral health conditions outweighs the savings produced on the physical health side. Although there is an assumed decrease in utilization for avoidable acute care services, the aggregate increase in utilization for BH services, offsets the savings, at least in the initial years. Despite the program having a negative return on investment in aggregate, the Pregnant Women cohort begins to see positive savings in Year Five, a trend that will likely continue as time goes on and the members continue to receive the appropriate care they need to manage behavioral health conditions. Table 16 displays the additional costs by COA that result from more members receiving Behavioral Health services for each year of the projection period. Positive amounts indicate additional costs to the program, while negative amounts indicate savings that result from the decrease in physical health service utilization outweighing the additional behavioral health services needed.

Table 16: Additional Service Costs Due to Interventions

	Additional Service Costs Due to Interventions					
COA	FY15 MMs	CY17	CY18	CY19	CY20	CY21
ABD Duals	385,367	$0.02	$0.09	$0.21	$0.39	$0.65
ABD 21+	175,365	$0.07	$0.26	$0.59	$1.06	$1.70
ABD <21	31,322	$0.06	$0.19	$0.32	$0.39	$0.42
CHIP	303,738	$0.00	$0.00	$0.00	$0.00	$0.00
Foster Care <21	65,830	$0.01	$0.05	$0.12	$0.23	$0.39
Foster Care 21+	3,659	$0.02	$0.06	$0.15	$0.31	$0.52
Pregnant Women	35,005	$0.12	$0.26	$0.34	$0.17	$(0.67)
TANF <21	1,356,303	$0.01	$0.03	$0.06	$0.11	$0.20
TANF 21+	1,393,253	$0.01	$0.04	$0.10	$0.21	$0.36
Total	**3,749,842**	**$0.01**	**$0.05**	**$0.12**	**$0.22**	**$0.36**

One point to note: this particular ROI model assumes the cost structure around implementing the interventions within the primary care practices is a fee-for-service based approach where providers are reimbursed for each screening service provided. Since Med-QUEST operates under a capitation payment method, Managed Care Organizations will be the ones directly paying for the intervention services, while Med-QUEST will raise the cap rates to account for these additional health care costs. The potential for other cost structures is still being discussed and may yield additional savings/costs depending on the final payment methods used.

6. Conclusion

Overall, a conservative approach was used when estimating the return on investment for the Hawai'i SIM Behavioral Health Integration models. Useful insight can still be gained from the analysis despite the estimated negative return on investment. This model assumes a slow uptake by providers incorporating the BHI practices. Members who are identified as needing additional behavioral health services are few in number, especially in the initial years since screenings are assumed to be somewhat widespread across the population. If providers are able to narrow down and target individuals who they are concerned may have behavioral health conditions, the State of Hawai'i will likely see larger returns as screening costs will be reduced and members will receive the appropriate behavioral health services that they need. One key assumption in this model is that the FY14-FY15 blended base data BH utilizer costs are used as a proxy for newly identified mild-to-moderate BH utilizers. Ultimately, it is assumed that these newly identified members in need of BH services will likely begin to reflect a cost and service distribution similar to those BH utilizers within the FY14-FY15 blended base data as there is currently unmet need in the Hawai'i Medicaid healthcare system.

In summary, the evidence-based Behavioral Health Integration practices SBIRT, Screening for Depression/Anxiety, and Motivational Interviewing are likely to identify members who require behavioral health services who are currently not receiving the behavioral health care they need. Although this analysis on implementing these Behavioral Health Integration models in the Hawai'i Medicaid program is estimated to cost the State more money than is saved in the first five years, the integration of these services over time is expected to reduce costs for certain cohorts, in particular the Pregnant Women and Aged, Blind, Disabled members who are susceptible to co-morbid chronic conditions. To the extent that the actual SBIRT and depression/anxiety screening reimbursement rates vary from the estimates used within the model, additional costs or savings may result. The success of implementing these screening procedures and generating physical health savings is dependent on identifying the target population that is susceptible to mild-to-moderate behavioral health conditions and focusing efforts on identifying these individuals rather than screening everyone who visits a primary care or women's health provider. The benefit of reduced costs from these few individuals as a whole does not outweigh the costs of screening large populations, at least in the Medicaid system. However, the increased access to much needed behavioral health services for these individuals with mild-to-moderate behavioral health needs does pay dividends at the individual level.

There may be savings in other societal settings such as education, criminal justice, housing and the workforce once members receive the appropriate behavioral health care they need. The State of Hawai'i is pursuing other initiatives that focus on the more severe behavioral health needs populations that may generate potential savings that can offset the increased costs for these new mild-to-moderate BH users identified as a result of the screening interventions. Despite the limited potential for total Medicaid costs savings Behavioral Health Integration in primary care practices and women's health settings is a key step towards Hawai'i's goals for better health, better care (both of body and mind), and reducing health care disparities.