



SBIRT Analysis

Financial impact for practices that implemented Screening, Brief Intervention, and Referral to Treatment (SBIRT) for substance use

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DEFINITIONS

The following are common terms used throughout this report. We have defined them separately so they may be referred to easily.

Annualized cost trend - This metric represents the average annual change in cost, calculated using actual observed monthly cost changes within a 12 month period.

First possible SBIRT visit – A member’s first visit to an SBIRT site following SBIRT implementation at that practice site.

Monthly savings – The difference between per member per month (PMPM) healthcare costs after first possible SBIRT visit and the projected PMPM healthcare costs, given that SBIRT was never implemented. While we use the term “savings”, it may be better thought of as avoided healthcare costs.

Cumulative savings – The sum of monthly savings beginning after first possible SBIRT intervention.

Credible – Having enough underlying members to produce consistent and reliable results.

Index month – We assigned index months in relation to each patient’s first possible SBIRT intervention. For example, assume a practice implemented SBIRT in June 2012 and consider the following two patients:

1. A person whose first visit following implementation is in July 2012
2. A person whose first visit following implementation is in October 2012

For person 1, August would be assigned an index month of 1. For person 2, November would be assigned an index month of 1. These index months do not correspond to calendar months but rather track each individual’s SBIRT experience relative to the month in which their first possible SBIRT intervention occurred.

Pre-SBIRT – This refers to a member’s experience prior to the date of their first possible SBIRT intervention. This encompasses all negative index months (-24 to -1).

Post-SBIRT – This refers to a member’s experience after the date of their first possible SBIRT intervention. This encompasses all positive index months (1+).

EXECUTIVE SUMMARY

Colorado received two consecutive, five-year grants from the Substance Abuse and Mental Health Services Administration (SAMHSA) to implement Screening, Brief Intervention, and Referral to Treatment (SBIRT) for substance use, administered by the Colorado Department of Human Services, Office of Behavioral Health (OBH), and managed and implemented by Peer Assistance Services, Inc. (PAS). PAS, with funding provided by OBH, asked Milliman to conduct an analysis of claims data from participants in this program to assess results for healthcare cost savings. This report presents the analysis of the impact of the SBIRT program on the total cost of healthcare for populations to whom SBIRT was made available.

We used the Colorado All Payer Claims Database (APCD) as the data source for this analysis. The Center for Improving Value in Health Care (CIVHC) provided data extracts for patients attributed to SBIRT practices using their own proprietary methodology. Because patients that receive SBIRT were not individually identifiable, either through a separate tracking approach or through specific claim codes that were used for the screening, we assigned all of the attributed patients to each SBIRT practice based on the earliest visit to a practice site after SBIRT was implemented at that site. We then analyzed each patient’s total cost of care on a per-member-per-month (PMPM) basis before and after this first post-SBIRT visit.

The goal of this analysis was to determine if any healthcare savings were achieved for practice sites that implemented SBIRT by comparing the actual costs seen in the post-SBIRT period to a projection of expected costs if SBIRT had not been implemented. We aligned all patients’ claim data by index month, using the month in which their first visit to a practice post-SBIRT occurred as the index month, and summarizing claim data for the 24-month pre-SBIRT period, as well as the 21-month post-SBIRT period. We also analyzed cost trends to determine any changes in trend rates pre- and post-SBIRT.

Due to limitations in data availability, we were only able to analyze the total cost of care through up to 21 months following the index month for each patient (this varied by site based on their SBIRT implementation date). Further, we were also only able to perform analysis on 10 of the 13 SBIRT practices. This included claims data between June 2010 and January 2015. Due to 42 CFR Part 2, a federal law which restricts the availability of substance use claims in the APCD, claims related to substance use were not included in this analysis.

For all analyzed practice sites in total, we observed higher healthcare cost levels post-SBIRT than were seen pre-SBIRT. These higher costs may be a reflection of the increased level of healthcare necessary for those who were screened and referred for further treatment, including physical and behavioral healthcare (excluding substance use claims as described above). However, we also observed annualized cost trend rates that were significantly higher pre-SBIRT than post-SBIRT. These trends are shown in Table 1.

Table 1: Annualized Cost Trend

Pre-SBIRT Period	Post-SBIRT Period
13.8%	-2.4%

Although healthcare cost levels appeared to increase immediately following the index month, over time, cost levels stagnated and declined, producing a negative trend. We used the observed trend rate pre-SBIRT to project expected PMPM cost levels in the post-SBIRT period had SBIRT not been implemented. These projected healthcare costs are compared to the actual post-SBIRT cost levels, and are also used as the projections of expected cost levels through the second year after a visit to an SBIRT site after implementation. **Based on the methodology explained above, we estimate that monthly healthcare savings (avoided healthcare costs) were achieved by the 10th month post-SBIRT, and cumulative healthcare savings will be achieved by the 24th month post-SBIRT.** This does not account for any actual costs of implementing the SBIRT tool. Here, we define monthly savings as the difference between the actual or projected PMPM

healthcare costs following SBIRT and the projected PMPM healthcare costs without SBIRT. We define cumulative healthcare savings as the sum of monthly savings beginning post-SBIRT. Again, no SBIRT costs are reflected in these results, and the savings can be considered as avoided healthcare costs.

There were not enough patients in each practice site to produce a credible site-by-site savings or cost trend analysis; however, we were able to make observations about practices that were assigned enough members through attribution to be credibly analyzed. Emergency department (ED) patients showed a much higher and positive healthcare cost trend rate post-SBIRT than other practices. We speculate that a population assigned to an emergency department may differ materially from populations attributed to less intensive care settings in that they may have more complicated healthcare needs. Additionally, the ED staff does not follow their patients' care paths and patterns after they leave the ED, whereas primary care practices are far more likely to follow their patients after their office visits and treatments; thus the difference in healthcare cost patterns after the SBIRT was used. Consequently, we also analyzed all SBIRT practices combined excluding the ED site. The resulting annual trend rates calculated for this population are shown in Table 2.

Table 2: Annualized Cost Trend excluding ED Site

Pre-SBIRT Period	SBIRT Period
8.0%	-27.4%

This shows an even greater difference between the pre- and post-SBIRT periods. In this analysis, we estimate **monthly healthcare savings were achieved by the 9th month post-SBIRT and cumulative savings were achieved by month 18 post-SBIRT.**

We analyzed trends by major service category (inpatient hospital outpatient hospital, ER, etc.) and over all lines of business (commercial, Medicare and Medicaid). We did not observe any service categories that realized a shift in trend significantly different from other service categories in the post-SBIRT period.

Future analyses would be improved by tracking specific patients who receive SBIRT, so they may be easily identified in claim data. Additionally, future analyses should include a control population that never receives SBIRT but otherwise has similar characteristics to the SBIRT population. Comparison of the two groups would provide a more robust view of the impact of SBIRT.

A number of caveats should be noted in reviewing these results.

- Several factors influence healthcare cost patterns. The decreasing pattern of healthcare costs post-SBIRT is quite dramatic and could be caused by a number of factors not associated with the use of the SBIRT tool. Further detailed analyses would add additional value to this report.
- Due to 42 CFR Part 2, no substance use claims were included in this analysis.
- Because there is no record of which specific patients received SBIRT, patients were attributed based on CIVHC methodology and assigned to practices based on their first visit to a site after SBIRT implementation. We do not know that these patients actually received screening. Our analysis serves as a proxy for patients who *could have* received screening and follows their claims experience over time.
- We relied on the APCD provided by CIVHC on August 11, 2016, for this analysis. We did not audit these data, but did examine them for reasonability. Any errors or omissions in the APCD would result in errors or omissions in these results.
- The timeframe for the data available does not extend far enough to fully capture all post-SBIRT claims at sites with more recent implementation dates. To the extent that the experience at these recent implementation sites differs from the average experience, the results are biased towards the experience of the sites that implemented SBIRT earlier.

- The absence of a control group available for this analysis makes the inferences from this analysis less robust than an analysis that includes results for a control group.

INTRODUCTION

Colorado received two consecutive, five-year grants from the Substance Abuse and Mental Health Services Administration (SAMHSA) to implement screening, brief intervention, and referral to treatment (SBIRT) for substance abuse in the state. The second five-year grant will end in September 2016. This report serves as an analysis of impacts of the SBIRT program for Peer Assistance Services, Inc. (PAS). PAS supports the integration of behavioral health into healthcare through a collaborative effort of the Office of Behavioral Health, Colorado Department of Public Health and Environment, and Healthcare Policy and Financing to standardize substance use screening as a healthcare practice. SBIRT is a comprehensive, integrated, public health approach based on universal screenings which create awareness about the preventable health issue of risky substance use.

PAS does not have access to the specific patients that have been screened through SBIRT. Instead, they provided Milliman with the provider practices that implemented SBIRT and when implementation occurred. Further, substance abuse medical claims are blocked from claims data due to federal regulation 42 CFR Part 2. Thus, our analysis relied on examining total healthcare costs for patients who visited a practice after the implementation of SBIRT. Using the Colorado All Payer Claims Database (APCD), we analyzed costs for patients in both pre- and post- SBIRT periods by major healthcare service category and practice for each line of business (Commercial, Medicaid, and Medicare). Through analyzing trends from these cost analyses, we determined cost savings through 21 months following the index month, as well as projected future avoided healthcare costs (savings) for the SBIRT program.

METHODOLOGY

CIVHC provided Milliman with an extract from the Colorado APCD for this analysis. CIVHC was provided with a list of the National Provider Identifiers (NPIs) for each of the 13 practices that implemented SBIRT. Using these NPIs, CIVHC performed patient attribution using their own proprietary methodology on the APCD in order to compile a list of patients that visited an SBIRT site.

The subset of data that CIVHC provided for this analysis included a list of attributed patients, and the medical and pharmacy claims data for these attributed patients. This list of attributed patients did not indicate to which practice the patient was attributed. In order to analyze the impacts of the screening program, Milliman assigned members to the first practice they visited after that site had implemented SBIRT. This did not affect the aggregate results; however it does impact the results for any individual site that is referenced in this report.

Due to availability of data and practice information, we were able to analyze 10 of the 13 practices (3 practices implemented SBIRT so recently that sufficient healthcare claim data was not yet available in the APCD):

- Denver Health Dental
- La Casa - Quigg Newton Family Health Center
- Denver Health Emergency Department
- San Luis Valley Health
- Salud, Sterling
- Salud, Fort Morgan
- Salud, Fort Lupton
- Peak Vista Community Health Centers
- Park Hill Family Health Clinic
- Vail Valley Medical Center

TIMEFRAME

The data extract that CIVHC provided contains medical claims data from June, 2010 through November, 2015. The count of medical and pharmacy claims appears to taper off towards the end of this timeframe, but are stable through February, 2015. For this reason, we excluded all data after February, 2015.

For each member, we analyzed claims for the 24 months prior to the index month, as well as the 21 months following the index month. We excluded months 22-24 after the index month due to credibility concerns.

ELIGIBILITY REQUIREMENTS

We used member eligibility data to select the sample used in this analysis:

1. We required each member to have three months of continuous eligibility prior to and after the index month in order to ensure that we are analyzing a consistent set of members when comparing claims experience immediately prior to and after the index month (as opposed to including members who had only a month of eligibility during the index month and then would drop out of the data thereafter, for example).
2. We removed all Medicare Part D only members from this analysis due to the lack of available medical cost data for these members.

3. We assigned members to the line of business (i.e. Commercial, Medicaid or Medicare) under which they were covered on their most recent date of eligibility (some members changed line of business during the timeframe of this analysis).

PRE- AND POST-SBIRT PERIODS

We aggregated all healthcare costs for members and assigned them to the practices at which they had the earliest visit to a practice after SBIRT implementation. In order to view cost trends around the date of potential SBIRT assessments, we assigned index months in relation to each patient's first visit. Stated differently, these index months do not correspond to calendar months but rather track patients' SBIRT experience relative to the month in which they first visited an SBIRT practice after that practice had implemented SBIRT. The index month is a patient's month zero in the study timeline.

Additionally, to avoid skewing the results, we excluded the index month from our analysis. Because index months are assigned based on a visit to an SBIRT practice, all members exhibit a cost increase in the index month. This is an artifact of the study design, not a reflection of continuing healthcare needs. Thus, the pre- and post-SBIRT periods surround the index month but do not include it.

Using this methodology for assigning costs around SBIRT implementation, we were able to look at all practices in total, despite their varying dates of implementation. We followed a similar process for determining member months in order to calculate PMPM costs on a consistent basis.

COST SAVINGS ANALYSIS

In order to calculate cost savings of the program, we trended the pre-SBIRT period forward to project expected costs for the post-SBIRT period to represent costs as if SBIRT had not been implemented. To do this, we fit an exponential model to the 23 months of pre-SBIRT data using a least squares fitting technique. The extrapolation of this trend line into the post-SBIRT period represents the expected costs as if SBIRT had not been implemented. The one month periods on either side of the index month showed spikes in cost, so we excluded them from projection calculations in order to calculate a more conservative trend. We then compared the expected costs to the actual post-SBIRT period PMPM costs to calculate savings for the 21 months after SBIRT.

PROJECTED COST SAVINGS ANALYSIS

Although we did not find net savings in aggregate dollars across all practice sites within the 21 month post-SBIRT period, we did observe a meaningful reduction in cost trends post-SBIRT. If costs continued to increase at the trend rates observed pre-SBIRT, projected net savings would be achieved by the 24th month post-SBIRT, which is three months beyond the time period that we had available for our analysis.

In order to illustrate the important impact of this reduction in cost trends, we developed projections for what cost levels might look like through 24 months post-SBIRT if costs continue to increase at pre-SBIRT trend rates. The goals of this analysis were as follows:

1. Estimate the month at which incremental savings begin to be realized
2. Estimate the month at which cumulative savings cover the initial costs post-SBIRT

As described in the "Cost Savings Analysis" section, we projected baseline PMPM costs (or expected cost levels had SBIRT not been implemented) by fitting an exponential model to the first 23 months of the pre-SBIRT

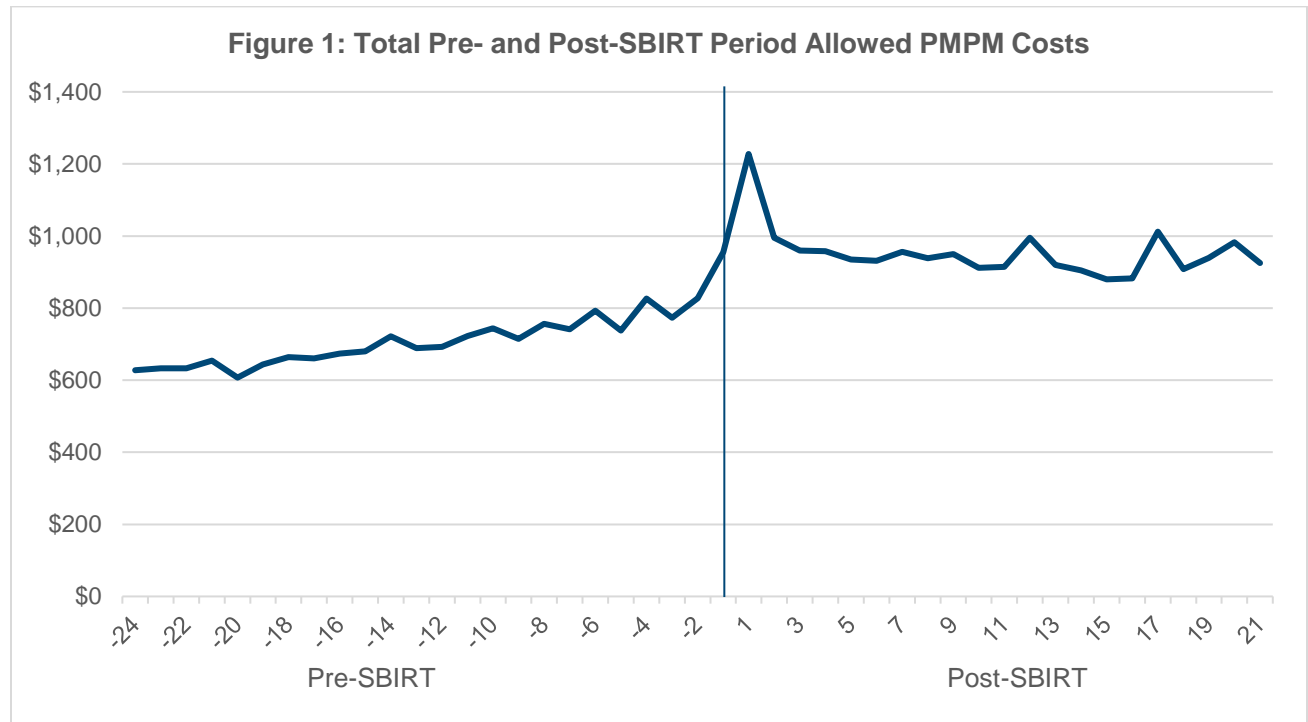
period. Similarly, we projected post-SBIRT PMPM costs forward beyond the 21 months for which we have actual data by fitting an exponential model to the last 20 months of data from the post-SBIRT period. As mentioned previously, we excluded the one month periods surrounding the first visit month from trend calculations in order to arrive at a more conservative estimate.

We then compared the projected cost levels using pre-SBIRT trend levels to the project cost levels using post-SBIRT trend levels. The first month at which the projected costs using post-SBIRT period trend were less than the costs projected at the pre-SBIRT period trend satisfy the first goal listed above. The second goal was calculated by summing PMPM differences over time until the program reached its breakeven point, or until costs (negative savings) at the beginning of the post-SBIRT period were outweighed by the positive savings in the later months of the period.

RESULTS

TOTAL RESULTS

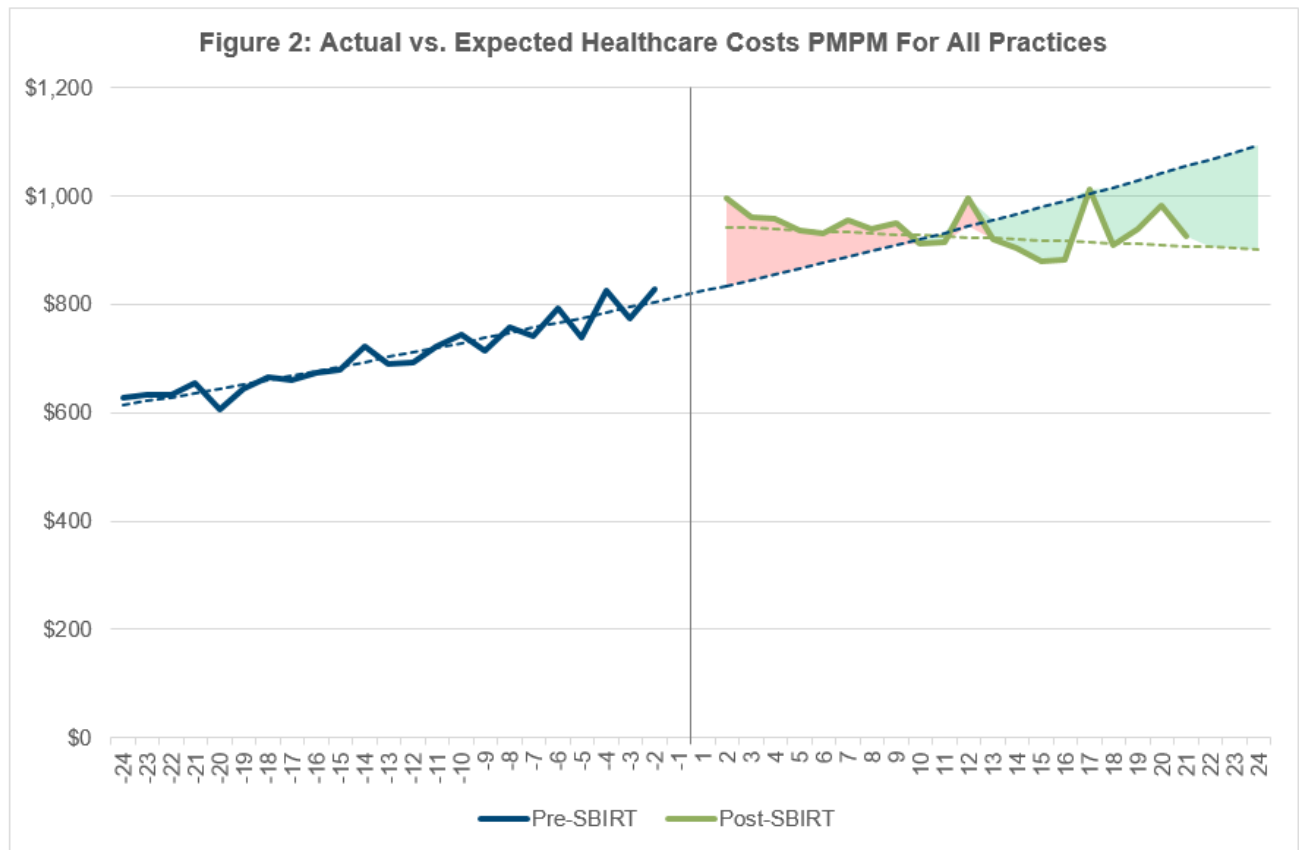
Across all practices that implemented SBIRT, we see an initial increase in the level of costs immediately following SBIRT. Figure 1 shows PMPM costs for members assigned to an SBIRT site by index month, with the index itself excluded. The portion to the left of the vertical line represents the 24-month pre-SBIRT period, while the portion to the right represents the 21-month post-SBIRT period.



Although the post-SBIRT period shows a higher level of costs following the first visit (possibly due to an increased level of care resulting from interventions after SBIRT), the downward trend of the post-SBIRT period suggests that incremental savings may be realized. Table 3 shows the annualized trend for the pre- and post-SBIRT periods.

Table 3: Annualized Cost Trend	
Pre-SBIRT Period	Post-SBIRT Period
13.8%	-2.4%

Pre-SBIRT and post-SBIRT PMPM costs projected at these trend rates can be seen in the dotted lines in Figure 2. As mentioned in the “Methodology” section, we removed the one month periods on either side of the index month to develop more conservative (i.e. less steep) trend lines.



From this graph, we can see that the period where incremental savings begin to show occurs about halfway through the post-SBIRT period (i.e. where the trend lines of the pre- and post-SBIRT periods intersect). The area between the two trend lines beginning in the post-SBIRT period represent monthly cost savings. In other words, the area from the vertical line to the intersection point shows negative savings (or costs), while the area to the right of the intersection shows positive savings. The values that correspond to these data points are provided in the table on the following page.

Table 4 shows projected PMPM costs at the trend rate observed before SBIRT is implemented (along the blue dotted line in the graph) compared to the actual (solid green line) and projected PMPM costs at the trend rate observed following the index month (dotted green line). The row in green below shows the point at which projected monthly savings start to be realized, while the row in blue shows the breakeven point of the program.

Table 4: Cost Savings by Month Past First Visit to an SBIRT Site Post-Implementation					
Months Past First Visit	Projected PMPM Costs without SBIRT	PMPM Costs with SBIRT*	\$ Savings (PMPM)	% Savings	Cumulative \$ Savings (PMPM)
n	[A]	[B]	[C] = [A] - [B]	[D] = [C] / [A]	[E _n] = [E _{n-1}] + [C _n]
1	\$824	\$1,228	-\$404	-49.00%	-\$404
2	\$834	\$995	-\$161	-19.27%	-\$565
3	\$844	\$960	-\$116	-13.68%	-\$680
4	\$855	\$958	-\$103	-12.04%	-\$783
5	\$866	\$935	-\$70	-8.06%	-\$853
6	\$876	\$932	-\$55	-6.32%	-\$908
7	\$887	\$956	-\$69	-7.78%	-\$977
8	\$898	\$939	-\$41	-4.54%	-\$1,018
9	\$909	\$950	-\$41	-4.48%	-\$1,059
10	\$920	\$911	\$9	0.97%	-\$1,050
11	\$932	\$914	\$18	1.90%	-\$1,032
12	\$943	\$995	-\$52	-5.48%	-\$1,084
13	\$955	\$919	\$36	3.72%	-\$1,048
14	\$967	\$905	\$62	6.43%	-\$986
15	\$979	\$880	\$99	10.09%	-\$887
16	\$991	\$882	\$109	10.99%	-\$778
17	\$1,003	\$1,012	-\$9	-0.85%	-\$787
18	\$1,016	\$908	\$107	10.58%	-\$679
19	\$1,028	\$940	\$88	8.61%	-\$591
20	\$1,041	\$983	\$58	5.54%	-\$533
21	\$1,054	\$925	\$129	12.23%	-\$404
22	\$1,067	\$905	\$162	15.17%	-\$242
23	\$1,080	\$903	\$177	16.37%	-\$66
24	\$1,093	\$901	\$192	17.56%	\$126

*PMPM Costs with SBIRT are actual figures through month 21, and projected figures from months 22 – 24

Comparing the post-SBIRT projected costs, using the pre-SBIRT trend rates, to the actual post-SBIRT period PMPM costs shows projected savings within the first year, approximately 10 months after the first visit. Using projected post-SBIRT period figures past our actual 21 months of data, we project that the savings from the SBIRT program would outweigh the costs incurred at the beginning of the post-SBIRT period by the end of year 2, approximately 24 months after the first visit.

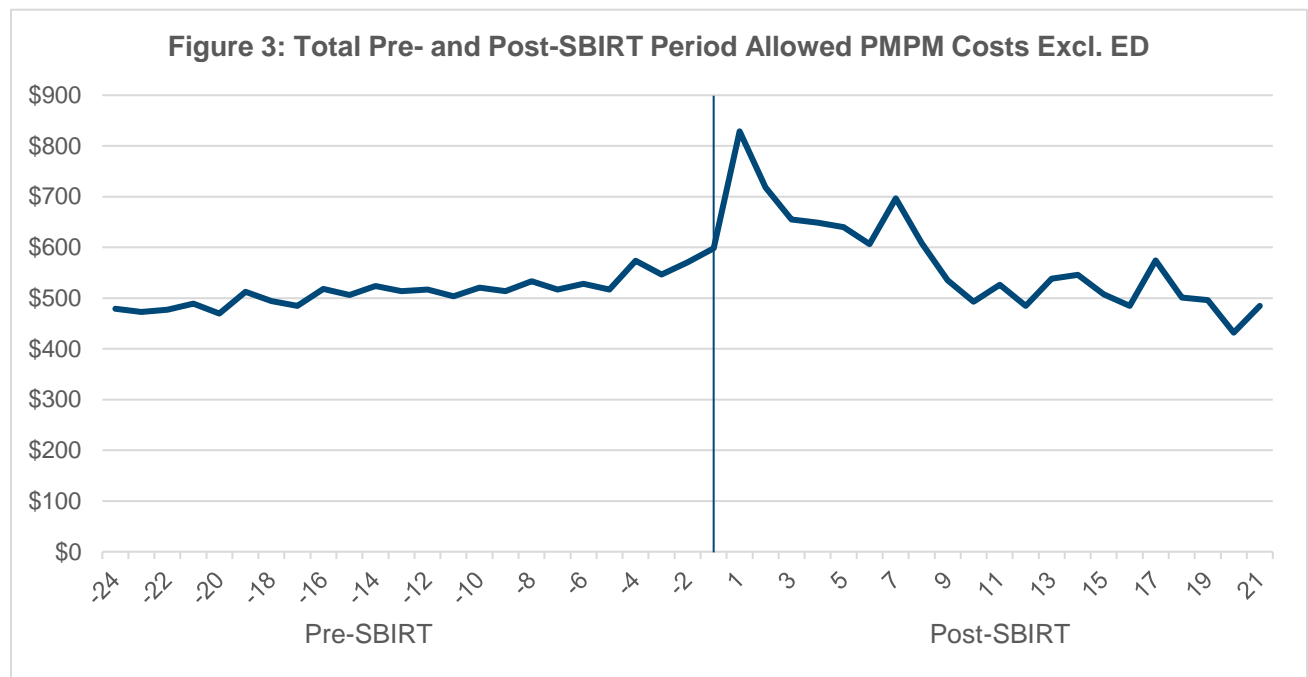
The impact on total cost using these projections are shown by year following the first visit in Table 5.

Table 5: Total Cost Impact by year	
Year After First SBIRT Visit	Total Cost Impact
1	10.2%
2	-9.9%
Cumulative	-0.6%

TOTAL RESULTS EXCLUDING EMERGENCY DEPARTMENT

When analyzing results at the practice level, we observed that emergency department (ED) patients showed a notably different healthcare cost trend pattern in the post-SBIRT period compared to the patients from the other SBIRT sites. The ED staff does not follow their patients' care paths and patterns after they leave the ED, whereas primary care practices are far more likely to follow their patients after their office visits and treatments; thus the difference in healthcare cost patterns after the SBIRT was used. Given that emergency department populations may be sicker and may utilize healthcare differently than other populations, and that ED visits tend to have higher costs than other types of services, we also looked at analyzing total PMPM costs for all practices excluding ED patients.

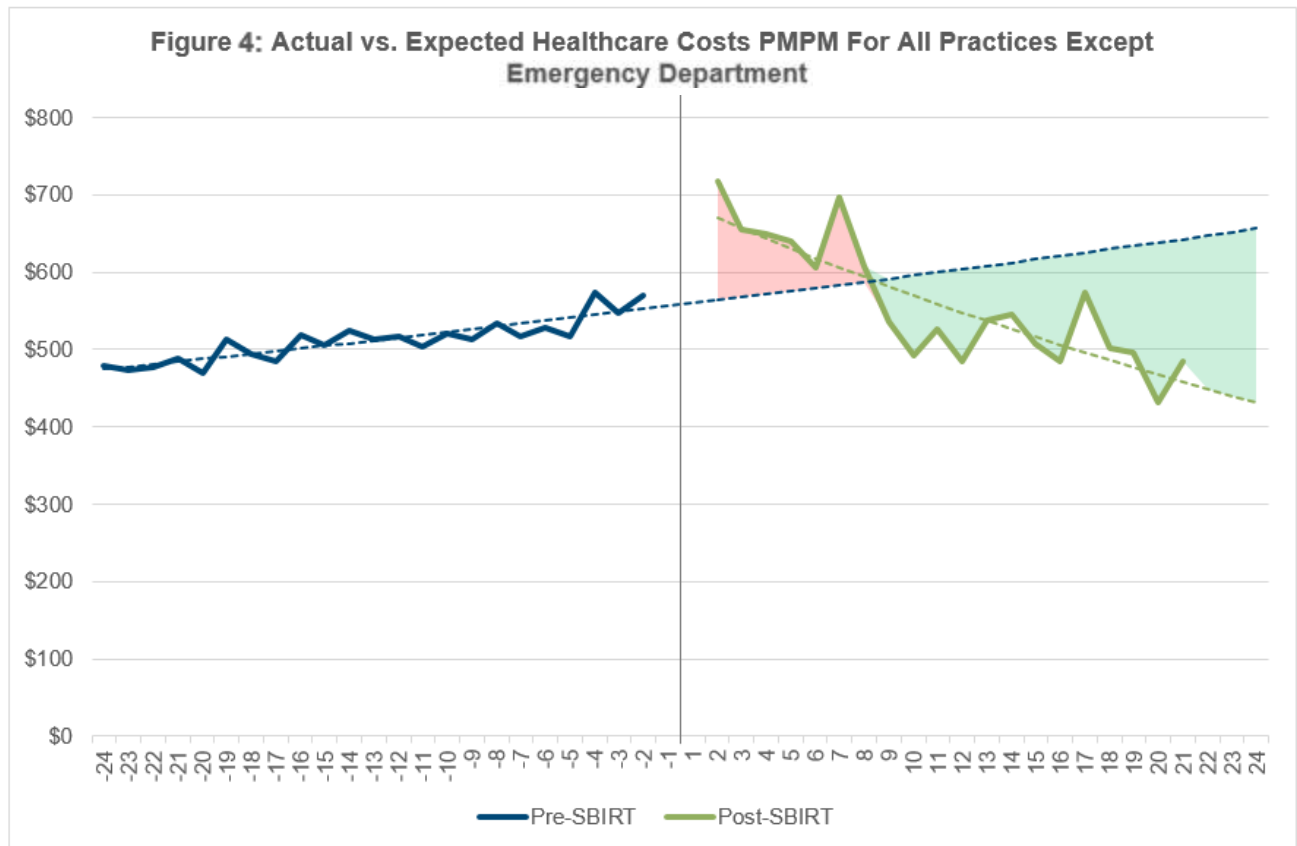
Figure 3 shows the actual pre- and post-SBIRT period PMPM costs in total without ED.



By removing ED from the total results, we observe a stronger decreasing trend in the post-SBIRT period. This leads to both earlier projected incremental cost savings and a cumulative breakeven point within the 21 months of actual post-SBIRT period data. Compared to annual trends using all practices, the trend in the pre-SBIRT period is now moderately lower when excluding ED, while the trend in the post-SBIRT period is significantly lower, as seen in Table 6.

Table 6: Annualized Cost Trend excluding ED	
Pre-SBIRT Period	Post-SBIRT Period
8.0%	-27.4%

As before, we graphed the baseline and post-SBIRT PMPM costs projected at these trend rates, excluding the one month periods on either side of the first visit to an SBIRT site, as shown in Figure 4.



As shown in the graph, the month where projected incremental savings begin to be achieved occurs slightly earlier when excluding ED, and cumulative savings are positive within the 21 months of the post-SBIRT period. The values that correspond to these data points are provided in the table on the following page.

Table 7 below shows projected PMPM costs using the pre-SBIRT period trend rate (blue dotted line) compared to the actual (solid green line) and projected PMPM costs using the observed post-SBIRT period trend (green dotted line) rate for all practices excluding emergency department patients. The row in green shows the point at which monthly savings start to be realized, while the row in blue shows the breakeven point of the program.

Table 7: Cost Savings by Month Past First Visit excluding ED					
Months Past First Visit	Projected PMPM Costs without SBIRT	PMPM Costs with SBIRT*	\$ Savings (PMPM)	% Savings	Cumulative \$ Savings (PMPM)
n	[A]	[B]	[C] = [A] - [B]	[D] = [C] / [A]	[E_n] = [E_{n-1}] + [C_n]
1	\$560	\$829	-\$269	-48.04%	-\$269
2	\$564	\$718	-\$154	-27.40%	-\$423
3	\$568	\$655	-\$87	-15.36%	-\$511
4	\$572	\$649	-\$77	-13.55%	-\$588
5	\$576	\$640	-\$64	-11.20%	-\$653
6	\$580	\$607	-\$27	-4.66%	-\$680
7	\$584	\$697	-\$113	-19.37%	-\$793
8	\$588	\$609	-\$21	-3.60%	-\$814
9	\$592	\$535	\$56	9.51%	-\$757
10	\$596	\$493	\$103	17.26%	-\$655
11	\$600	\$526	\$73	12.24%	-\$581
12	\$604	\$485	\$119	19.78%	-\$462
13	\$608	\$538	\$70	11.50%	-\$392
14	\$612	\$546	\$66	10.83%	-\$326
15	\$617	\$507	\$109	17.70%	-\$216
16	\$621	\$485	\$136	21.90%	-\$80
17	\$625	\$574	\$51	8.17%	-\$29
18	\$630	\$501	\$128	20.35%	\$99
19	\$634	\$496	\$138	21.70%	\$236
20	\$638	\$432	\$206	32.32%	\$443
21	\$643	\$485	\$158	24.58%	\$601
22	\$647	\$449	\$198	30.67%	\$799
23	\$652	\$440	\$212	32.51%	\$1,011
24	\$656	\$431	\$225	34.30%	\$1,236

*PMPM Costs with SBIRT are actual figures through month 21, and projected figures from months 22 – 24

By excluding ED, we now see projected incremental savings beginning in the 9th month following SBIRT and positive projected cumulative savings beginning in the 18th month. Both of these project savings metrics are realized within the first 21 months of the post-SBIRT period and do not rely on projections beyond the study period.

Projected impact on total cost excluding ED under these trend assumptions are shown by year following the first visit in Table 8.

Table 8: Total Cost Impact by Year (excluding ED)	
Year After First SBIRT Visit	Total Cost Impact (excluding ED)
1	6.6%
2	-22.4%
Cumulative	-8.5%

RESULTS BY PRACTICE, LINE OF BUSINESS, AND SERVICE CATEGORY

In addition to total results, we also analyzed data at the practice level. This analysis was too granular to determine credible results, since most practices were assigned fewer than 1,000 member months.

As an additional view of cost savings, we separated costs into different service categories in the pre- and post-SBIRT periods. The categories we used are as follows:

- Outpatient medical
- Inpatient medical
- Professional
- Emergency Room
- Prescription Drug
- Other

Results showed costs decreased across all categories in the post-SBIRT period. Thus, savings from SBIRT were projected across various types of services.

CONCLUSION AND FURTHER ANALYSIS

The results from this analysis show positive projected incremental cost savings within the first year following SBIRT and projected cumulative cost savings within the second year across all practices, including emergency department patients, although results likely vary between practices. Although substance abuse costs cannot be analyzed directly under current federal regulation, total healthcare costs appear to decrease for members who receive SBIRT. While completing this analysis, we noted several items that could be explored further. The pieces we recommend for additional investigation are as follows.

- In addition to analyzing total healthcare costs, other health outcomes could be studied. It would be interesting to identify improved health status as a result of SBIRT, with the caveat that substance abuse claims cannot be used for this analysis.
- With the second five-year grant for SBIRT in Colorado about to end, if there are future implementations of SBIRT, data could be collected in a different way to more closely analyze direct impacts of the program. This analysis could involve following the members who actually received the screening, provided that a record of SBIRT participants is kept.
- Given the data available, cost savings in this analysis were calculated by trending data before SBIRT implementation forward into the period following implementation. In future studies, baseline costs could be developed using actual costs of a control population that never received SBIRT in order to more closely estimate actual avoided healthcare costs.

CAVEATS

We encountered several limitations in the course of this analysis:

- Several factors influence healthcare cost patterns. The decreasing pattern of healthcare costs post-SBIRT is quite dramatic and could be caused by a number of factors not associated with the use of the SBIRT tool. Further detailed analyses as described above would add additional value to this report.
- 42 CRF Part 2 is a federal law that restricts the availability of substance abuse claims in the APCD. The patients most impacted by a substance abuse screening program would likely have substance abuse claims, but we cannot analyze the cost and utilization patterns of these claims due to this regulation. Thus, we relied on healthcare costs in total to assess the impact of SBIRT.
- PAS does not have a record of specific members who received this screening. Thus, members were attributed based on CIVHC methodology and assigned to practices based on their first visit to a site after implementation. There is no guarantee that these members actually received screening. Our analysis serves as a proxy for members who could have received screening and follows their claims experience over time.
- The thirteen Colorado practices that implemented SBIRT have widely varying implementation dates. Given that the data used in this analysis is not credible after January, 2015, any site with an implementation date later than April 2013 will not be fully represented in the 21-month post-SBIRT period of this analysis. Currently, six of the thirteen practices have implementation dates after this time. Having longer post-SBIRT periods (24 months and beyond) available for all practices would allow for more credible data in this analysis.

This analysis is intended for the use of Peer Assistance Services, Inc. and the Office of Behavioral Health in evaluating the impacts of Colorado practices that implemented SBIRT. Other uses are inappropriate. Milliman does not intend to benefit or create a legal duty to any third party recipient of this work. We understand that this report may be made available to other interested parties, including the Office of Behavioral Health.

We relied on the APCD provided by CIVHC on August 11, 2016, for this analysis. This included medical claims header and line files, as well as additional files providing details on procedures and diagnoses, pharmacy claims header and line files, member eligibility files, and provider files for members that CIVHC attributed to SBIRT sites. We did not audit these data, but did examine them for reasonability. Any errors or omissions in the APCD would result in errors or omissions in these results.

Guidelines issued by the American Academy of Actuaries require actuaries to include their professional qualifications in all actuarial communications. The lead author of this report, Stephen P. Melek, is a member of the American Academy of Actuaries, and meets the qualification standards for performing the analyses in this report.