The Commonwealth Fund

Affordable, quality health care. For everyone.

When You Don't Have Input Data: A Step-by-Step Guide to Using Research Evidence and National Data in the Return-on-Investment Calculator

The Return-on-Investment (ROI) Calculator for Partnerships to Address the Social Determinants of Health is designed to help health care and community-based organizations plan sustainable arrangements to finance the delivery of social services that can improve the health of high-need, high-cost (HNHC) patients. To generate ROI scenarios and break-even analyses, the calculator requires users to enter baseline medical and social service utilization and costs and expected intervention impacts.

What if you don't have ready access to input data, or you don't know the expected impact of providing social services? This hypothetical case example demonstrates how you can use two resources published by the Commonwealth Fund — the Average Utilization and Cost Data Tables and a Review of Evidence for Health-Related Social Needs Interventions — to derive relevant inputs and impacts needed by the calculator. Start by downloading these resources from the ROI Calculator welcome page (shown below). Then follow these step-by-step instructions on how to apply them.

Welcome to the Return on Investment (ROI) Calculator for Partnerships to Address the Social Determinants of Health

Welcome to the Return on Investment (ROI) Calculator for Partnerships to Address the Social Determinants of Health

This calculator is designed to help community-based organizations and their health system partners plan sustainable financial arrangements to fund the delivery of social services to high-need, high-cost (HNHC) patients. HNHC patients, who account for a large share of overall health care spending, often have social needs, clinically complex conditions, cognitive or physical limitations, and/or behavioral health problems. Research shows that complex patients are likely to benefit from a holistic model of care that addresses the social determinants of health (SDOH) such as transportation, housing, and nutrition, in addition to medical needs.

WHO IS THE TOOL INTENDED FOR?

- Health systems, payers, medical providers, social service providers, and community-based organizations seeking to address SDOH.

HOW CAN THIS TOOL HELP ME?

- The calculator can help you explore, structure and plan sustainable financial arrangements to support the delivery of social services to HNHC patients.

ROI CALCULATOR HELP DOCUMENTS & GUIDES

SDOH Table: Describes the non-medical services this tool supports. There is also an option to plan a particular service not listed in the table by selecting "other" in the calculator.

Data Checklist: An overview of the inputs you and your partner organization will need to use this tool.

Average Cost & Utilization Table: A table of national average health care utilization rates and costs of services for patients with complex needs and all adults living in the community. If you do not have baseline rates and costs to enter, use this table to find values to input into the calculator.

Evidence Review: A collection of relevant evidence on the impact of health-related social needs interventions from peer-reviewed and gray literature. Use this review to find estimates that you can enter in the calculator to generate ROI scenarios or a break-even analysis in case you do not have program data easily available.

Calculation Guide: Provides explanations of formulas the tool uses to calculate its results.

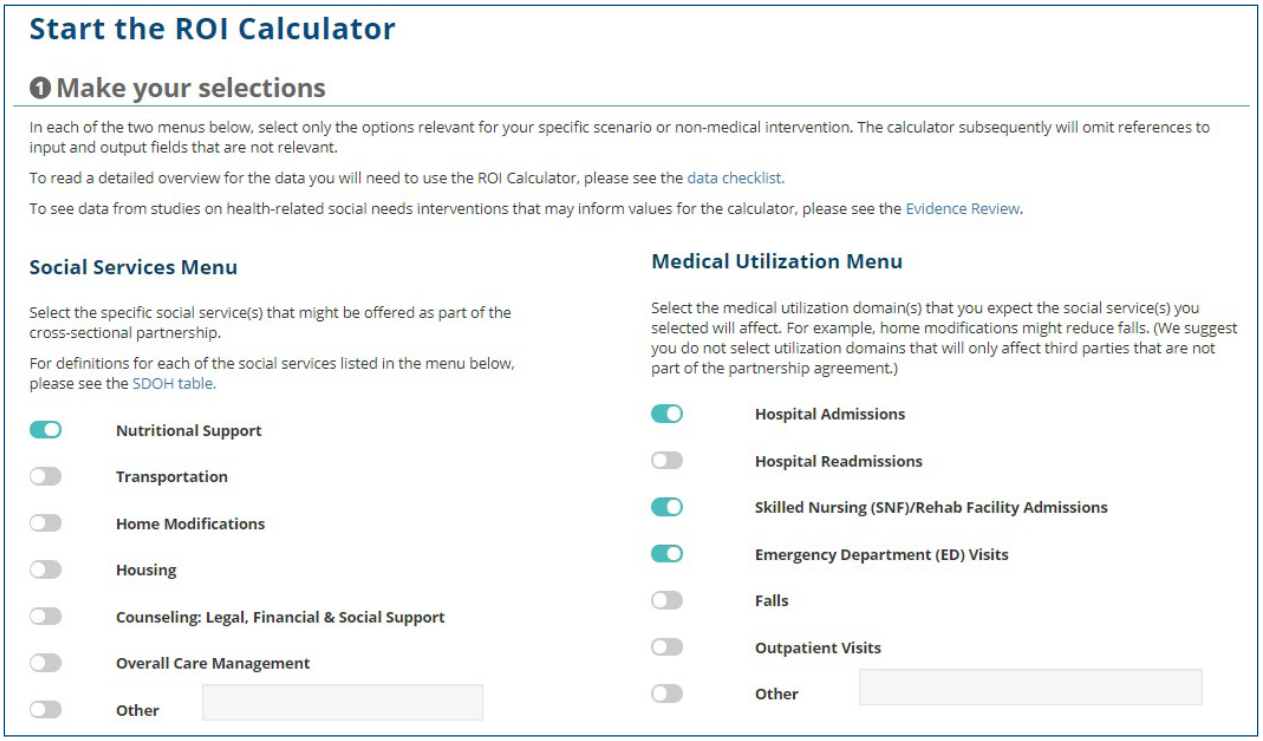
Case Scenario

Maria is the leader of a nonprofit community-based organization (CBO), Meals4Health, that aims to improve the health of its community by delivering medically tailored meals (MTMs) to the homes of residents with complex illnesses who lack access to nutritious food. The agency is experiencing growing demand for its services, driven by referrals from health care providers, who have started to screen their patients for unmet social needs. To meet this growing need, Maria wishes to secure a financially sustainable funding stream from the health care sector to supplement the CBO's charitable donations.

Maria has learned that a local health plan is seeking to address health-related social needs as part of its comprehensive care management program for HNHC members who are dually eligible for Medicare and Medicaid. After seeing a demonstration of the ROI Calculator at a conference, Maria would like to use the online tool to develop a proposal for a partnership with the health plan that would support its goals while also covering the costs of the MTM program. To get started, she clicks on the "Start the ROI Calculator" button at the bottom of the welcome page.

Step 1. Select Social Services and Medical Utilization of Interest

The ROI Calculator can model a range of social services and their impacts on medical utilization. For the purposes of her proposal, Maria selects *Nutritional Support* from the Social Services Menu on the "Start the ROI Calculator" web page (shown below). Under the Medical Utilization Menu, she selects health care services that are likely to be impacted by an MTM program: *Hospital Admissions, Skilled Nursing Facility (SNF) Admissions,* and *Emergency Department (ED) Visits.*



Step 2. Enter Baseline Medical Utilization Rates and Medical Service Costs

Maria will need to enter baseline medical utilization and cost data for the dually eligible insured population. For her initial conversation with the health plan, she can use nationally representative data from the Average Utilization and Cost Data Tables for this purpose. Should the health plan express interest in her proposal, Maria can ask the plan to share actual utilization and cost data to refine the ROI calculations, or the health plan can use the online tool to do so.

Maria extracts data for hospital admissions, length of stay, and ED visits for dually eligible adults from *Table 1a, Health Care Utilization for the U.S. High-Need Adult Population,* and *Table 2a, Health Care Spending Per Service for the U.S. High-Need Adult Population,* as shown below. (The calculator can accept rates per person or rates per 1,000 persons; she chooses the latter for better numeric precision.) Maria turns to Table 4 to extract data for SNF admissions, length of stay, and costs per SNF day.

ROI Calculator for Partnerships to Address the Social Determinants of Health

Table 1a. Health Care Utilization for the U.S. High-Need Adult Population

Data represent adults ages 18 and older who live in the community and have three or more chronic conditions and one or more functional limitation(s)

		AGE			INSURANCE				RACE/ETHNICITY					INCOME			REGION			
	All High-Need Adults	18–64	65–74	75+	Private Only	Medicaid	Medicare	Dual (Medicare + Medicaid)	White	Black	Hispanic	Asian	Other	< 200% FPL	200%–399% FPL	400%+ FPL	Northeast	Midwest	South	West
AVERAGE NUMBER PER YEAR																				
Emergency Department Visits																				
Per person	0.8	0.9	0.8	0.8	0.5	1.2	0.8	0.9	0.9	0.8	0.8	0.4	1.1	0.9	0.9	0.6	0.9	0.9	0.8	0.8
Per 1,000 persons	829	907	842	750	523	1,149	802	846	857	777	763	403	1,102	882	933	574	872	874	788	822
Hospital Inpatient Admissions																				
Per person	0.6	0.5	0.8	0.6	0.5	0.6	0.7	0.6	0.6	0.5	0.6	0.3	0.6	0.6	0.7	0.6	0.7	0.6	0.6	0.5
Per 1,000 persons	606	545	754	591	504	563	651	576	641	535	561	308	636	583	708	551	677	626	609	510
Hospital Inpatient Days																				
Per person	4.0	3.6	5.4	3.6	1.8	4.9	4.1	4.0	3.9	4.8	4.0	2.4	3.2	4.0	4.2	3.7	4.3	3.3	4.5	3.1
Per 1,000 persons	3,952	3,582	5,372	3,608	1,764	4,941	4,069	4,001	3,868	4,788	3,966	2,406	3,206	3,954	4,207	3,659	4,329	3,334	4,529	3,125
Average Hospital Length of Stay																				
Days per stay	6.5	6.6	7.1	6.1	3.5	8.8	6.3	6.9	6.0	8.9	7.1	7.8	5.0	6.8	5.9	6.6	6.4	5.3	7.4	6.1
Hospital Outpatient Department Visits																				
Per person	2.0	2.4	2.1	1.5	2.5	2.3	2.1	1.6	2.2	1.7	1.8	1.1	1.0	1.9	2.0	2.2	3.3	2.5	1.2	1.9
Per 1,000 persons	1,991	2,412	2,127	1,531	2,524	2,257	2,104	1,595	2,170	1,747	1,783	1,078	1,050	1,891	2,014	2,227	3,253	2,497	1,189	1,900
Paid Home Health Provider Days																				
Per person	39.0	26.1	41.5	50.0	2.5	31.8	25.2	81.8	33.9	49.4	58.8	44.1	26.0	48.1	28.4	27.3	63.6	34.4	33.9	32.3
Per 1,000 persons	39,041	26,056	41,550	49,981	2,508	31,755	25,152	81,784	33,914	49,375	58,757	44,123	26,041	48,107	28,357	27,342	63,649	34,397	33,869	32,326
Physician Office Visits																				
Per person	10.1	10.8	11.4	8.8	11.3	10.4	9.9	10.2	10.3	8.3	12.2	7.0	10.5	9.4	10.4	11.5	11.0	9.9	9.8	10.1
Per 1,000 persons	10,096	10,779	11,401	8,822	11,292	10,442	9,910	10,232	10,298	8,259	12,162	7,006	10,469	9,434	10,400	11,488	11,023	9,879	9,819	10,061
All Provider Office Visits																				
Per person	16.8	18.6	19.0	14.0	20.1	16.3	16.1	17.3	17.0	13.8	19.5	11.2	20.8	15.3	17.6	19.4	18.9	17.4	15.0	17.6
Per 1,000 persons	16,752	18,553	19,028	13,959	20,141	16,261	16,109	17,294	17,015	13,815	19,500	11,227	20,776	15,339	17,647	19,445	18,892	17,376	15,041	17,588

Source: Analysis of 2015-2017 Medical Expenditure Panel Survey (MEPS) Household Component conducted by Westat for the Commonwealth Fund. Data represent the U.S. noninstitutionalized civilian adult population ages 18 and older with three or more chronic conditions and one or more functional limitation(s).

Notes: MEPS measures inpatient discharges (labeled as inpatient admissions) and nights in the hospital for discharges (labeled as inpatient days). Inpatient data include "zero-night stays" with the same admission and discharge dates, which made up less than 2 percent of all inpatient stays. All Provider Office Visits includes Physician Office Visits. Per person values rounded to one decimal point. Per 1,000 values rounded to nearest integer. FPL = federal poverty level. For more information about MEPS, see: https://meps.ahrq.gov/mepsweb/survey_comp/household.jsp.

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ROI Calculator for Partnerships to Address the Social Determinants of Health

Table 2a. Health Care Spending Per Service for the U.S. High-Need Adult Population

Data represent adults ages 18 and older who live in the community and have three or more chronic conditions and one or more functional limitation(s)

	All High-Need Adults	AGE			INSURANCE				RACE/ETHNICITY					INCOME			REGION			
		18–64	65–74	75+	Private Only	Medicaid	Medicare	Dual (Medicare + Medicaid)	White	Black	Hispanic	Asian	Other	< 200% FPL	200%–399% FPL	400% + FPL	Northeast	Midwest	South	West
AVERAGE SPENDING PER SERVICE																				
Emergency Department Visit	$745	$780	$757	$700	$1,375	$705	$727	$679	$744	$688	$788	$1,291	$676	$736	$742	$790	$694	$705	$712	$912
Hospital Inpatient Stay	$14,056	$16,926	$13,670	$11,818	$22,877	$14,989	$12,944	$13,719	$12,892	$16,011	$15,978	$24,390	$19,802	$12,912	$14,267	$16,922	$12,044	$11,259	$15,070	$17,982
Hospital Inpatient Day	$2,155	$2,575	$1,919	$1,935	$6,540	$1,707	$2,071	$1,975	$2,137	$1,790	$2,258	$3,118	$3,931	$1,903	$2,401	$2,548	$1,884	$2,113	$2,027	$2,935
Hospital Outpatient Department Visit	$731	$984	$539	$488	$1,311	$817	$643	$606	$691	$672	$830	$2,476	$631	$771	$739	$631	$806	$657	$985	$396
Paid Home Health Day	$130	$102	$120	$148	$120	$108	$145	$125	$145	$107	$107	$154	$84	$131	$122	$134	$163	$127	$104	$131
Physician Office Visit	$286	$312	$272	$263	$358	$211	$314	$243	$294	$272	$278	$178	$273	$251	$298	$348	$271	$324	$279	$270
Provider Office Visit	$252	$263	$256	$237	$290	$200	$267	$239	$256	$249	$258	$160	$232	$232	$255	$291	$245	$274	$249	$241

Source: Analysis of 2015-2017 Medical Expenditure Panel Survey (MEPS) Household Component conducted by Westat for the Commonwealth Fund. Data represent the U.S. noninstitutionalized civilian adult population ages 18 and older with three or more chronic conditions and one or more functional limitation(s).

Notes: Hospital Inpatient and Outpatient includes facility and associated physician spending. Provider Office Visits includes Physician Office Visits. Values rounded to nearest dollar amount. FPL = federal poverty level. For more information about MEPS, see: https://meps.ahrq.gov/mepsweb/survey_comp/household.jsp.

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ROI Calculator for Partnerships to Address the Social Determinants of Health

Table 4. Utilization and Payment for Skilled Nursing Facility Care

Data represent Original (fee-for-service) Medicare Part A enrollees

	Total	AGE		DUAL MEDICARE + MEDICAID ENROLLMENT STATUS		RACE/ETHNICITY					
		Under 65 Years	65 Years and Over	Non-Dual	Dual	White (Non-Hispanic)	Black (or African American)	Hispanic	Asian/ Pacific Islander	American Indian/ Alaska Native	Other
AVERAGE PER YEAR											
Covered SNF Admissions Per 1,000 Original Medicare Part A Enrollees	64.8	38.5	70.1	49.0	139.0	67.6	73.9	45.5	37.1	57.5	38.4
Covered Days of SNF Care Per Covered SNF Admission (Length of Stay)	25.7	25.5	25.7	23.5	29.3	25.3	27.8	27.7	27.7	25.2	25.7
Covered Days of SNF Care Per 1,000 Original Medicare Part A Enrollees	1,665	984	1,803	1,151	4,078	1,708	2,055	1,261	1,027	1,447	987
Medicare Payments Per Covered SNF Admission	$11,450	$10,941	$11,506	$10,931	$12,308	$11,227	$11,946	$12,933	$14,405	$12,285	$12,391
Medicare Payments Per Covered SNF Day	$446	$428	$447	$465	$419	$444	$430	$467	$520	$488	$482

Source: Centers for Medicare and Medicaid Services, Medicare Skilled Nursing Facilities: Utilization, Program Payments, and Cost Sharing for Original Medicare Beneficiaries, by Demographic Characteristics and Medicare-Medicaid Enrollment Status, Calendar Year 2016 (Table MDCR SNF2).
Note: SNF = skilled nursing facility.

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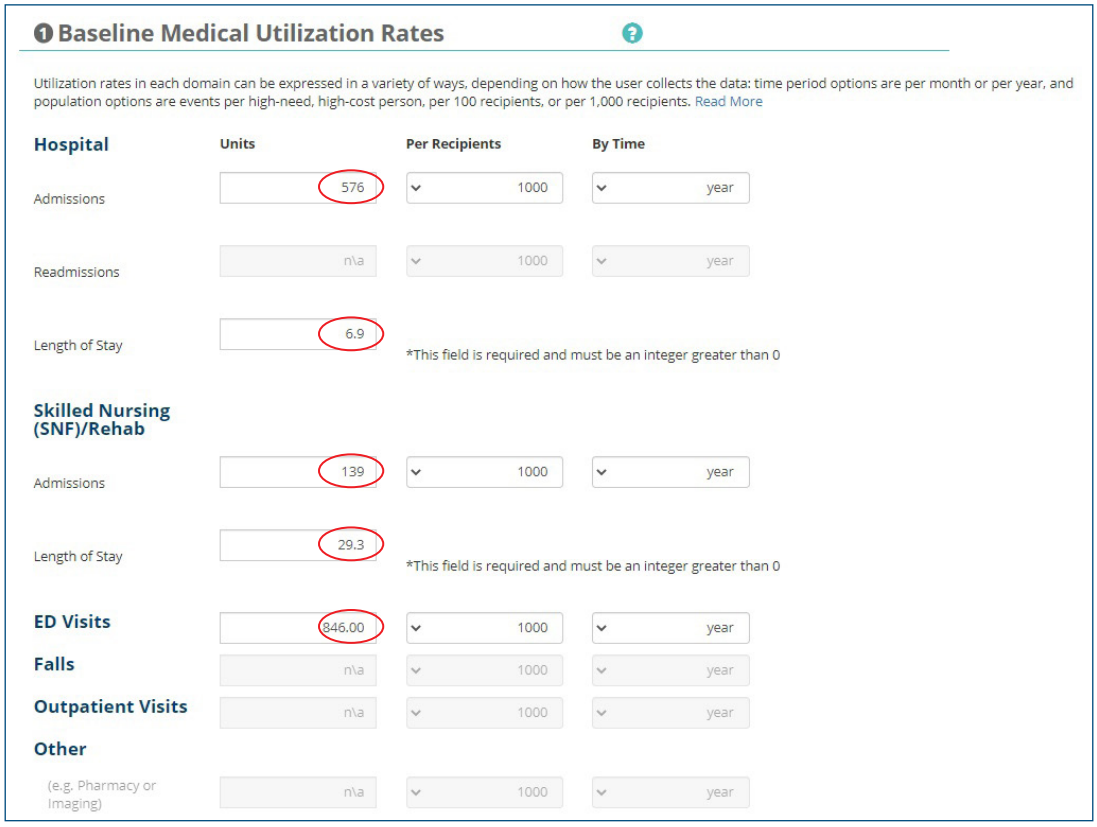
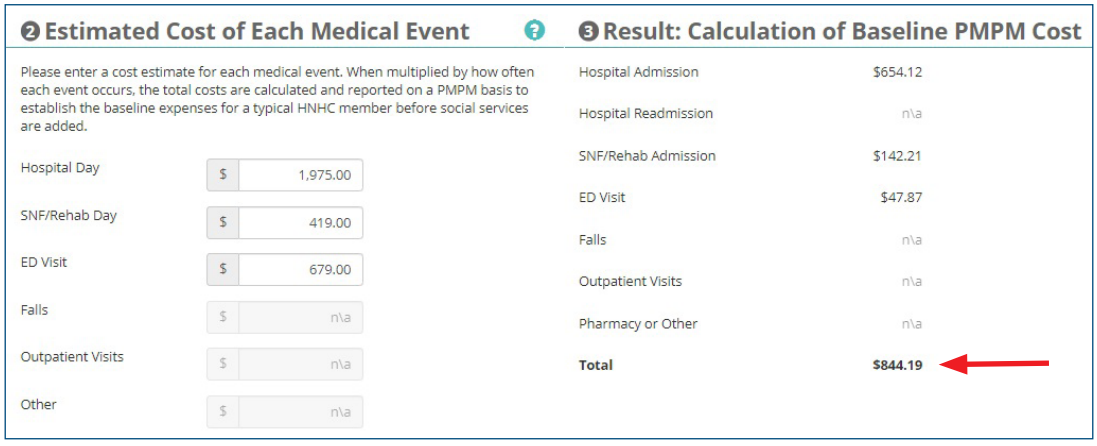
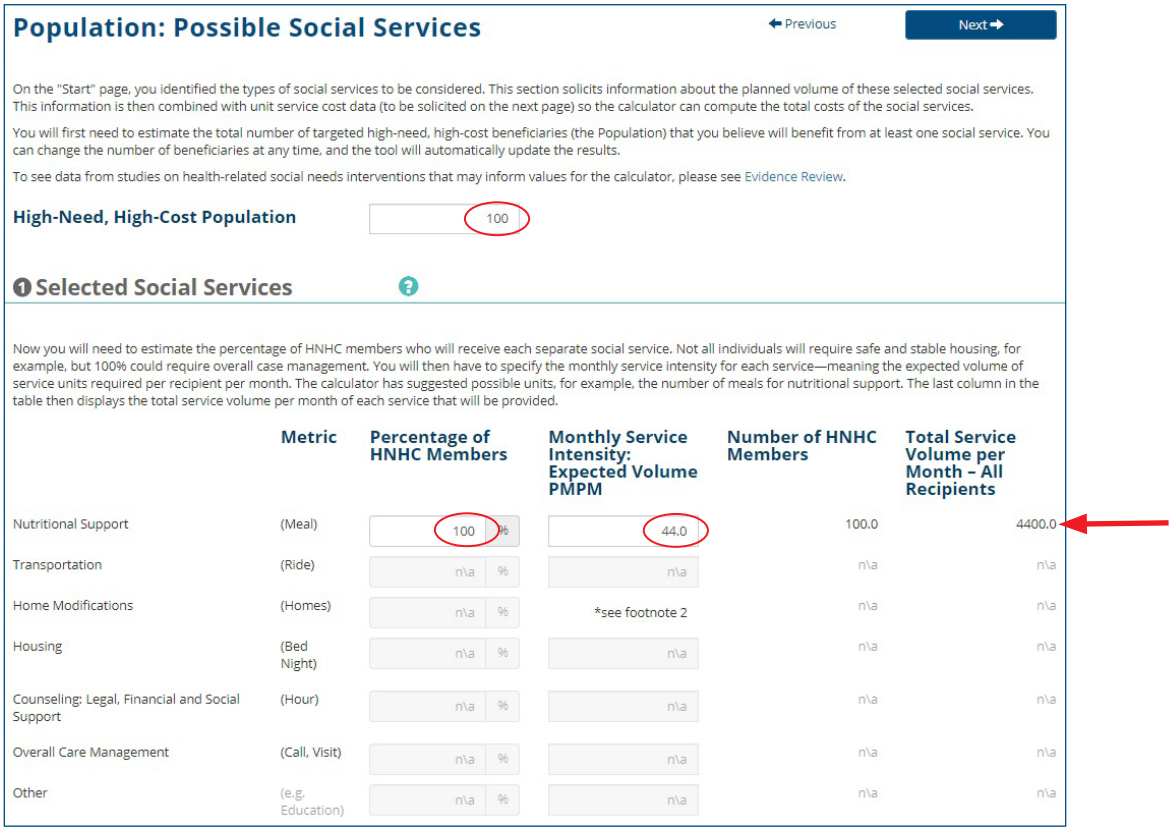
Maria enters the input data of interest from the tables in the calculator as shown on the screens below. The tool uses these input data to calculate standardized baseline medical costs of $844.19 per-member, per-month (PMPM) for the dually eligible population, as shown in panel 3 (lower right). Note that this amount does not represent the total cost of care for these patients. Rather, it represents the cost of the subset of health care services that Maria believes could be influenced by the provision of social services.





Step 3. Population and Social Services

Maria enters a target population of 100 HNHC patients to be served by a proposed pilot program. She enters 100 percent for the proportion of HNHC patients who will receive home-delivered meals. Next, she enters a monthly service intensity of 44 meals per participant, assuming that Meals4Health will deliver two meals per day for an average of 22 weekdays per month. The tool calculates that a total of 4,400 meals per month will be served to the population of 100 patients.



Population: Possible Social Services

← Previous Next →

On the "Start" page, you identified the types of social services to be considered. This section solicits information about the planned volume of these selected social services. This information is then combined with unit service cost data (to be solicited on the next page) so the calculator can compute the total costs of the social services.

You will first need to estimate the total number of targeted high-need, high-cost beneficiaries (the Population) that you believe will benefit from at least one social service. You can change the number of beneficiaries at any time, and the tool will automatically update the results.

To see data from studies on health-related social needs interventions that may inform values for the calculator, please see Evidence Review.

High-Need, High-Cost Population 100

1 Selected Social Services

Now you will need to estimate the percentage of HNHC members who will receive each separate social service. Not all individuals will require safe and stable housing, for example, but 100% could require overall case management. You will then have to specify the monthly service intensity for each service—meaning the expected volume of service units required per recipient per month. The calculator has suggested possible units, for example, the number of meals for nutritional support. The last column in the table then displays the total service volume per month of each service that will be provided.

	Metric	Percentage of HNHC Members	Monthly Service Intensity: Expected Volume PMPM	Number of HNHC Members	Total Service Volume per Month – All Recipients
Nutritional Support	(Meal)	100 %	44.0	100.0	4400.0
Transportation	(Ride)	n\a %	n\a	n\a	n\a
Home Modifications	(Homes)	n\a %	*see footnote 2	n\a	n\a
Housing	(Bed Night)	n\a %	n\a	n\a	n\a
Counseling: Legal, Financial and Social Support	(Hour)	n\a %	n\a	n\a	n\a
Overall Care Management	(Call, Visit)	n\a %	n\a	n\a	n\a
Other	(e.g. Education)	n\a %	n\a	n\a	n\a

Step 4. Social Service Costs

The calculator considers both fixed and variable costs of social service delivery. For example, fixed costs might include the cost of enhancing an information system to enable electronic referrals. Maria decides not to enter any fixed costs for the health plan until learning more about its approach. She assumes that offering the MTM program to one health plan will not add to fixed costs at Meals4Health in the short run. Should the CBO seek additional clients in the future, she may need to factor in additional fixed costs for acquiring new equipment, such as a second delivery van, at that time.

While waiting for the Meals4Health accountant to determine the CBO's variable costs, Maria consults the Evidence Review to benchmark MTM service costs reported by other programs. A 2018 study of the Community Servings program in Boston conducted by Berkowitz et al. (excerpted below) reported monthly program costs of $350 per participant for five days of meals per week, consisting of lunch, dinner, and a snack each day — similar to the Meals4Health service offering.

Study	Target population	Intervention summary	Type of evidence	Intervention cost	Results on utilization and costs of care
Berkowitz et al., 2018	Medicare and Medicaid dual-eligibles at nutritional risk	Study examines whether home delivery of medically tailored meals or nontailored food reduces the use of selected health care services and medical spending among Commonwealth Care Alliance members. Those receiving medically tailored meals had 5 days' worth of lunches, dinners, and snacks delivered each week. Those receiving nontailored food (i.e., not tailored to their medical needs) received 5 days' worth of prepared lunches and dinners delivered daily through a program similar to Meals on Wheels.	Nonrandomized trial with comparison group; Medically tailored meal group (n=133 in intervention group, 1,002 in comparison group) Nontailored food group (n=624 in intervention group, 1,318 in comparison group) Strong evidence	Average monthly program costs per participant for medically tailored meals: $350 Average monthly program costs per participant for nontailored food: $146	Medically tailored meals group compared to control saw 70% reduction in ED visits and 52% reduction in inpatient admissions. Nontailored food group compared to control saw 44% reduction in ED visits and 12% reduction in inpatient admissions. Medically tailored meals program and nontailored food program were associated with significantly lower medical spending compared to those not receiving any meal support (average monthly difference of $570 and $156 per participant, respectively). Researchers estimate monthly net savings of $220 per participant for medically tailored meals and $10 per participant for the nontailored food program.

A monthly service cost of $350 equates to approximately $7.95 per meal assuming 44 meals per month and, for simplicity, ignoring the cost of the snack. Maria enters $7.95 in the *CBO Unit Variable Cost* field (shown below). The tool calculates a total social service cost per beneficiary of $349.80 PMPM.

❶ Service Costs

	Metric	Total Annual Health Sector Partner Fixed Cost	Total Annual CBO Fixed Cost	CBO Unit Variable Cost
Nutritional Support	(Meal)	$ 0.00	$ 0.00	$ 7.95
Transportation	(Ride)	$ n\a	$ n\a	$ n\a
Home Modifications	(Homes)	$ n\a	$ n\a	$ n\a
Housing	(Bed Night)	$ n\a	$ n\a	$ n\a
Counseling: Legal, Financial and Social Support	(Hour)	$ n\a	$ n\a	$ n\a
Overall Care Management	(Call, Visit)	$ n\a	$ n\a	$ n\a
Other	(e.g. Education)	$ n\a	$ n\a	$ n\a
Cost Subtotal		**$0.00**	**$0.00**	

❷ Results: Total Social Service Recipients and Costs

The calculator reports the results below. Note that the per person costs are displayed in two ways: 1) on a per recipient basis and 2) on a per beneficiary basis. A recipient is an HNHC beneficiary who, by definition, has been designated to receive a particular service. Not all beneficiaries will likely need to receive each service.

		Total Recipients	Total Services Provided per Month	Cost per Month per Recipient	Cost per Month per Beneficiary
Nutritional Support	(Meal)	100.0	4400.0	$349.80	$349.80
Transportation	(Ride)	n\a	n\a	n\a	n\a
Home Modifications	(Homes)	n\a	n\a	n\a	n\a
Housing	(Bed night)	n\a	n\a	n\a	n\a
Counseling: Legal, Financial and Social Support	(Hour)	n\a	n\a	n\a	n\a
Overall Care Management	(Call, Visit)	n\a	n\a	n\a	n\a
Other	(e.g. Education)	n\a	n\a	n\a	n\a
Total					$349.80

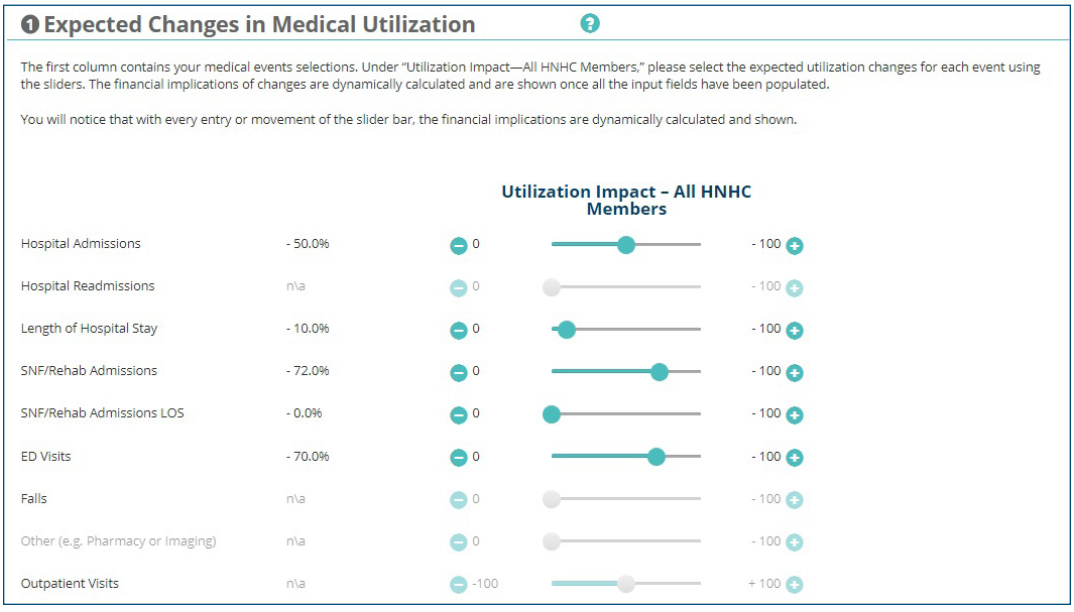
Step 5. Program Impact

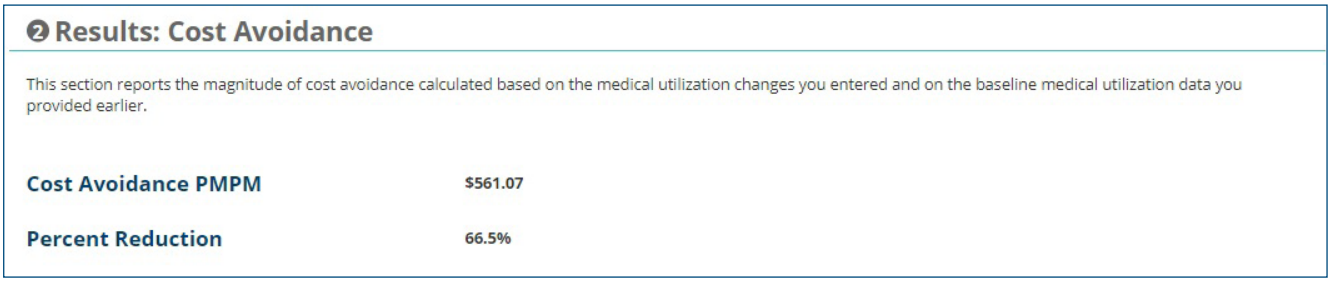
The study of the Community Servings program by Berkowitz et al. (2018), which Maria identified in the Evidence Guide (see Step 4), reported reductions of 52 percent in hospital admissions and 70 percent in ED visits for dually eligible health plan members who received an MTM program. Maria has heard about a more recent study of the same program by Berkowitz et al. (2019), which reported reductions of 49 percent in hospital admissions and 72 percent in SNF admissions. The Evidence Guide includes another study of an MTM program conducted by Gurvey et al. (2013), which reported reductions of 50 percent in hospital admissions and 37 percent in average length of stay (LOS) for members of a Medicaid health plan.

Study	Target population	Intervention summary	Type of evidence	Intervention cost	Results on utilization and costs of care
Gurvey et al., 2013	Members of a Medicaid managed care organization in Philadelphia and Southern New Jersey with chronic diseases such as HIV/AIDS, renal disease, and cancer	Clients received 3 free, delivered, nutritionally balanced meals a day, from a nonprofit called Metropolitan Area Neighborhood Nutrition Alliance. Registered dietitians provided medical nutrition therapy to the clients which included nutrition counseling and meal planning. Outcomes were examined for 6 months before meal delivery and the first 6 months of receiving meals. Intervention group compared to matched comparison group.	Retrospective analysis with matched comparison group (n=65 in intervention group, 633 in comparison group) Moderate evidence	Not given	Intervention group, compared to matched comparison group, had significantly lower overall average monthly health care costs ($28,268 vs. $40,906). Intervention group, compared to matched comparison group, had significantly fewer mean monthly inpatient visits (0.2 vs. 0.4), shorter length of inpatient stays (10.7 days vs. 17.1 days), and lower mean monthly inpatient costs ($132,441 vs. $219,639).

Maria enters these utilization impacts in the calculator, as shown below. For hospital admissions, she enters the average of the three study estimates (50 percent) using the slider or by clicking on the plus button to the right of the slider. Maria isn't confident about applying the impact on hospital LOS reported in the Gurvey study, since the program studied differed from the MTM program she is proposing. To be conservative in her estimates, she enters a reduction of 10 percent in LOS. (Note that changes in utilization can be entered on this screen only for the services selected in Step 1.)

The tool calculates that these combined utilization impacts will result in a 66.5 percent reduction in medical costs, equal to a medical cost avoidance of $561.07 PMPM. She will present these as preliminary estimates in her proposal, subject to refinement in conversation with the health plan.





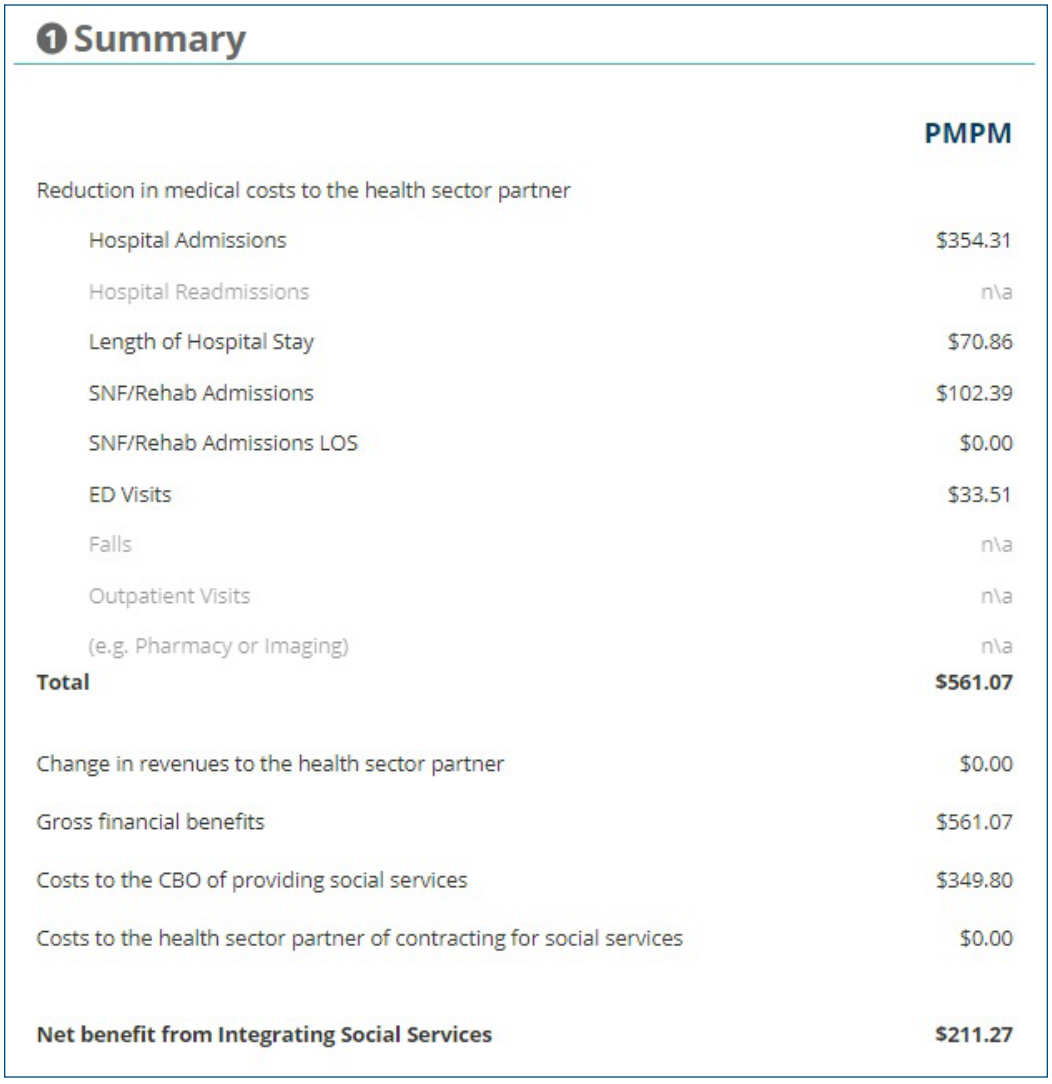
❷ Results: Cost Avoidance

This section reports the magnitude of cost avoidance calculated based on the medical utilization changes you entered and on the baseline medical utilization data you provided earlier.

Cost Avoidance PMPM	$561.07
Percent Reduction	66.5%

Step 6. Calculation of Financial Returns

The next screen can be used to account for the impact of value-based payment incentives or penalties on estimated ROI. Maria decides to ignore these potential revenue implications, which typically apply to health care providers rather than plans. She clicks ahead to the following screen, which displays a summary of the financial returns on the MTM program. Subtracting the cost of the MTM program from the gross financial benefit resulting from the reduction in medical utilization yields a net benefit of $211.27 PMPM from social service integration. Maria notes this estimate of potential savings is close to the estimated net savings of $220 PMPM reported by the Berkowitz et al. (2018) study.

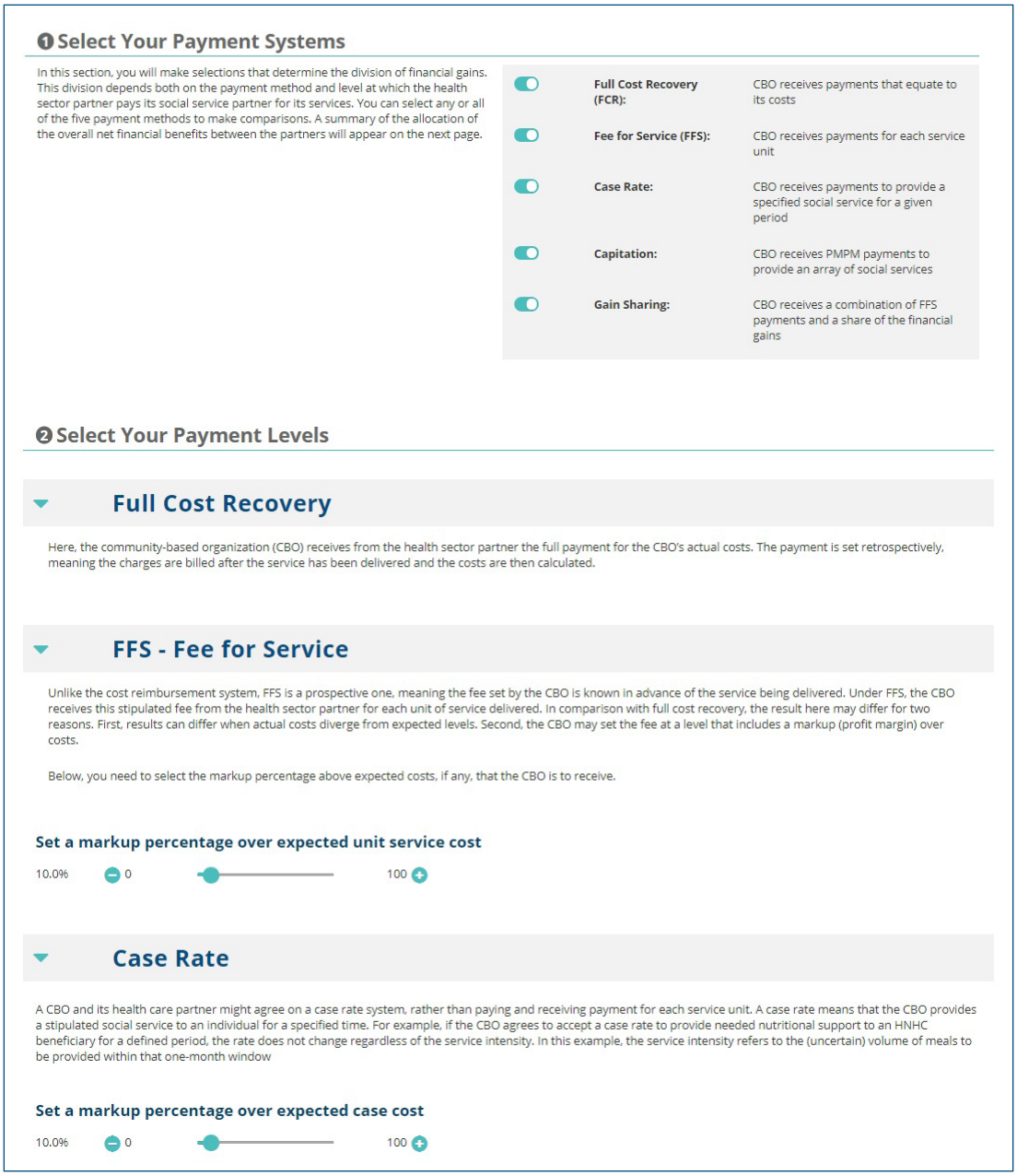


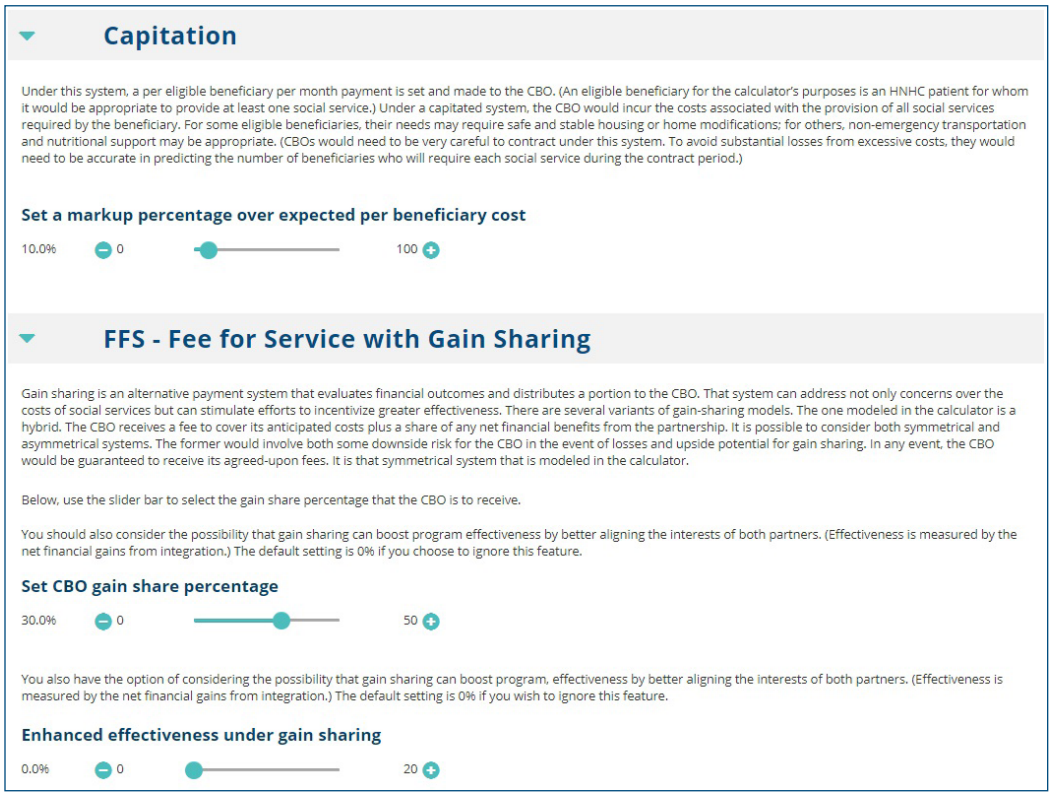
❶ Summary

	PMPM
Reduction in medical costs to the health sector partner	
Hospital Admissions	$354.31
Hospital Readmissions	n\a
Length of Hospital Stay	$70.86
SNF/Rehab Admissions	$102.39
SNF/Rehab Admissions LOS	$0.00
ED Visits	$33.51
Falls	n\a
Outpatient Visits	n\a
(e.g. Pharmacy or Imaging)	n\a
Total	**$561.07**
Change in revenues to the health sector partner	$0.00
Gross financial benefits	$561.07
Costs to the CBO of providing social services	$349.80
Costs to the health sector partner of contracting for social services	$0.00
Net benefit from Integrating Social Services	**$211.27**

Step 7. Select Payment Arrangements

The ROI Calculator can model the five payment arrangements shown below. Maria selects all five options so that she will be prepared for whichever method the health plan may consider. For the fee-for-service, case rate, and capitation options, Maria enters a 10 percent markup as a contingency for higher-than-expected service costs. Maria is particularly interested in how a gain-sharing arrangement could help the CBO build a stronger financial foundation to expand its service capacity. For this option, she assumes the agency might negotiate a 30 percent share of net savings. Although the calculator can estimate increased program effectiveness under a gain-sharing arrangement, Maria ignores that option until she can analyze how the CBO would achieve greater program efficiency.





Step 8. Payment System Comparison

This web page summarizes the financial results of integrating social services and medical services under each of the selected payment systems. The full-cost-recovery option offers the largest financial return to the health plan, while the gain-sharing option offers the largest financial return to the CBO under the assumptions modeled. Although the estimated return to the CBO appears similar for the other three payment options, the actual returns could vary given the uncertainty inherent in each option.

Payment System Comparison

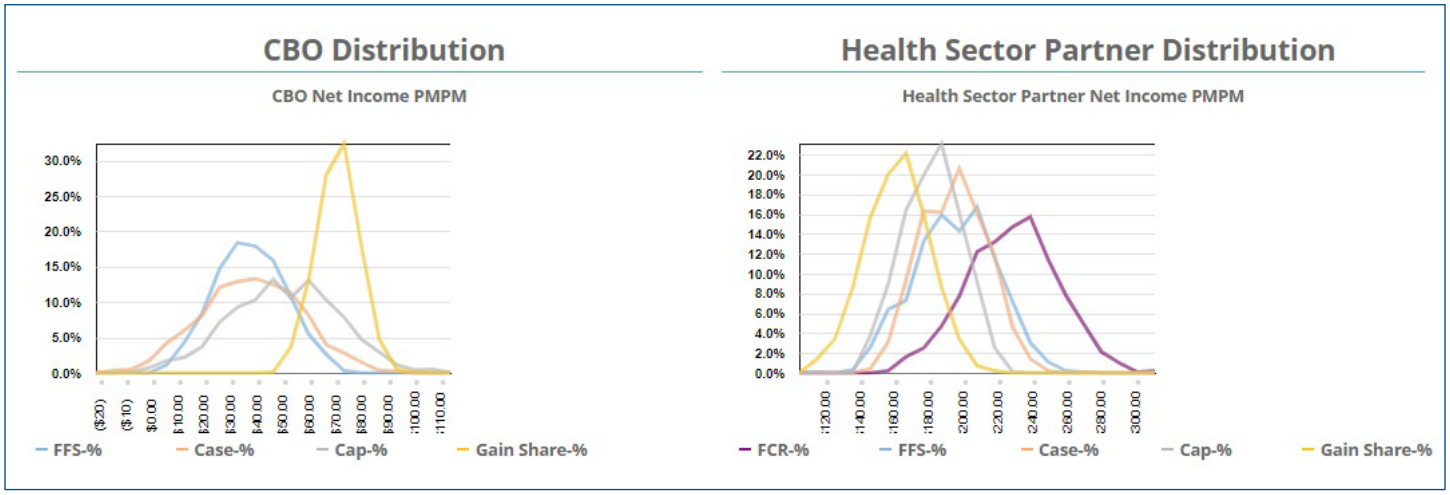
	Health Sector Partner		CBO
Payment System	PMPM *(Monthly net Income)*	ROI	PMPM *(Monthly net Income)*
Full Cost Recovery	$211.27	60.4%	$0.00
Fee for Service	$176.29	45.8%	$34.98
Case Rate	$176.29	45.8%	$34.98
Capitation	$176.29	45.8%	$34.98
Gain Sharing	$147.89	35.8%	$63.38

	CBO					Health Sector Partner				
	FCR	FFS	Case Rate	Capitation	Gain Share	FCR	FFS	Case Rate	Capitation	Gain Share
Current Value	$0.00	$34.98	$34.98	$34.98	$63.38	$211.27	$176.29	$176.29	$176.29	$147.89
Minimum Value	$0.00	$1.61	($22.34)	($13.34)	$44.88	$149.59	$113.10	$139.50	$135.22	$104.71
Maximum Value	$0.00	$69.15	$88.91	$112.73	$92.76	$309.20	$259.64	$239.71	$218.26	$216.44
Average	**$0.00**	**$33.33**	**$33.95**	**$46.47**	**$66.66**	**$222.22**	**$188.88**	**$188.27**	**$175.75**	**$155.55**
Standard Deviation	$0.00	$13.43	$18.94	$20.39	$7.87	$26.23	$23.69	$18.85	$16.94	$18.36
Span between Minimum and Maximum Values	$0.00	$67.54	$111.25	$126.07	$47.88	$159.61	$146.53	$100.21	$83.04	$111.72
Probability of Loss	0.0%	0.0%	3.4%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Set Minimum	0	35	35	35	63	211	176	176	176	148
Percent Below	0.0%	54.9%	52.1%	28.6%	32.8%	34.7%	29.9%	29.0%	48.8%	35.2%

Step 9. Accounting for Uncertainty

The ROI Calculator allows the user to assess the risk stemming from uncertainty in variables such as the baseline medical utilization, the proportion of patients to be served, the cost of social services, and the projected effectiveness of social services in reducing utilization of medical services. This risk assessment can help inform the parties of the need to minimize the risk of either party losing money.

Maria uses this option to simulate uncertainty of 10 percent in either direction in the variables under consideration for her proposal to the health plan (the tool allows the user to specify the level of uncertainty). This analysis reveals that the health plan has no chance of losing money under these assumptions, while there is a 3.4 percent chance the CBO could lose money under the case rate scenario and a 1.2 percent chance of doing so under a capitation arrangement. Maria also estimates the likelihood that the CBO or health plan might earn less than the estimated returns (bottom row).



The tool also graphically displays the probability of returns under each payment scenario.

Conclusion

This case example demonstrates how to use research evidence and national average utilization and cost data to estimate the impact of a specific kind of partnership between the health care and social service sectors. These resources can be useful for exploring the potential benefits of social service integration when one or both parties lack ready access to actual input data. To enhance the precision of the ROI calculation, the parties should seek to collect and use actual baseline medical utilization and service cost input data that are representative of the specific population and program of interest.

Projecting the ROI for social service integration can help make a business case for the development of a contractual partnership between a CBO and a health sector partner. Assuming that the parties can agree on a fair method of payment for services, such a financial arrangement can help to ensure a sustainable partnership such that the social service sector has the capacity to meet the needs of patients referred for nonmedical services by the health care sector.

As they gain experience with a program, the parties can measure its actual costs and impacts over time and, ideally, in comparison to a control group. These data can be used as revised inputs to refine the ROI calculation as a partnership matures. Outputs from the ROI Calculator can provide factual basis for the parties to consider in assessing different payment arrangements as they gain understanding of — and confidence to share in — the financial risks and rewards of the cross-sector partnership.

Appendix. Geographic Variations

Geographic variations in health care have been widely documented. The Average Utilization and Cost Data Tables include values for four regions of the country, which can be used to approximate the location of a cross-sector partnership.[1] For example, entering the West regional values in the example above results in a net benefit of social service integration of $290.90 (instead of $211.27) and ROI to the health plan ranging from 46.6 percent to 83.2 percent under the payment assumptions described. These types of calculations will produce only rough directional estimations of impact, which can be refined with actual data on medical utilization and costs collected by the partners.

1. State-level data for skilled nursing facility utilization and payment are available at "MDCR SNF 3, Medicare Skilled Nursing Facilities: Utilization, Program Payments, and Cost Sharing for Original Medicare Beneficiaries, by Area of Residence, Calendar Year 2016," Centers for Medicare and Medicaid Services, Office of Enterprise Data and Analytics, CMS Chronic Conditions Warehouse, n.d.