



ROI Calculator for Partnerships to Address the Social Determinants of Health

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*.

Start the ROI Calculator

1 Make your selections

In each of the two menus below, select only the options relevant for your specific scenario or non-medical intervention. The calculator subsequently will omit references to input and output fields that are not relevant.

To read a detailed overview for the data you will need to use the ROI Calculator, please see the [data checklist](#).

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

Social Services Menu

Select the specific social service(s) that might be offered as part of the cross-sectional partnership.

For definitions for each of the social services listed in the menu below, please see the [SDOH table](#).

- ☒ Nutritional Support
- ☐ Transportation
- ☐ Home Modifications
- ☐ Housing
- ☐ Counseling: Legal, Financial & Social Support
- ☐ Overall Care Management
- ☐ Other

Medical Utilization Menu

Select the medical utilization domain(s) that you expect the social service(s) you selected will affect. For example, home modifications might reduce falls. (We suggest you do not select utilization domains that will only affect third parties that are not part of the partnership agreement.)

- ☒ Hospital Admissions
- ☐ Hospital Readmissions
- ☒ Skilled Nursing (SNF)/Rehab Facility Admissions
- ☒ Emergency Department (ED) Visits
- ☐ Falls
- ☐ Outpatient Visits
- ☐ Other

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) | | | | | | | | | | | | | | | | | | | |
| | All High-Need Adults | AGE | | | | INSURANCE | | | | RACE/ETHNICITY | | | | | | INCOME | | | |
| | | 18-64 | 65-74 | 75+ | | Private Only | Medicaid | Medicare | Dual (Medicare + Medicaid) | White | Black | Hispanic | Asian | Other | | <200% FPL | 200%-399% FPL | 400%+ FPL | |
| 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 | |
| Per 1,000 persons | 829 | 907 | 842 | 750 | | 523 | 1,149 | 802 | 846 | 857 | 777 | 763 | 403 | 1,102 | | 882 | 933 | 574 | |
| 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 | |
| Per 1,000 persons | 606 | 545 | 754 | 591 | | 504 | 563 | 651 | 576 | 641 | 535 | 561 | 308 | 636 | | 583 | 708 | 551 | |
| 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 | |
| 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 | |
| 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 | |
| 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 | |
| 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 | |
| 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 | |
| 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 | |
| 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 | |
| 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 | |
| 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 | |
| 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 | |
| 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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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 | | | | Dual (Medicare + Medicaid) | RACE/ETHNICITY | | | | | INCOME | | | REGION | | | |
|--------------------------------------|----------------------|----------|----------|----------|--------------|----------|----------|----------|----------------------------|----------------|----------|----------|----------|------------|---------------|------------|-----------|----------|----------|----------|--|
| | | 18-64 | 65-74 | 75+ | Private Only | Medicaid | Medicare | 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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Table 4. Utilization and Payment for Skilled Nursing Facility Care

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

| | AGE | | | DUAL MEDICARE + MEDICAID ENROLLMENT STATUS | | RACE/ETHNICITY | | | | | | |
|---|----------|----------------|-------------------|--|----------|----------------------|-----------------------------|----------|------------------------|-------------------------------|----------|--|
| | Total | 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.

1 Baseline Medical Utilization Rates

Utilization rates in each domain can be expressed in a variety of ways, depending on how the user collects the data; time period options are per month or per year, and population options are events per high-need, high-cost person, per 100 recipients, or per 1,000 recipients. [Read More](#)

| Hospital | Units | Per Recipients | By Time |
|----------------|-------|---|---------|
| Admissions | 576 | 1000 | year |
| Readmissions | n/a | 1000 | year |
| Length of Stay | 6.9 | *This field is required and must be an integer greater than 0 | |

Skilled Nursing (SNF)/Rehab

| | | | |
|----------------|------|---|------|
| Admissions | 139 | 1000 | year |
| Length of Stay | 29.3 | *This field is required and must be an integer greater than 0 | |

ED Visits

| | | | |
|--|--------|------|------|
| | 846.00 | 1000 | year |
|--|--------|------|------|

Falls

| | | | |
|--|-----|------|------|
| | n/a | 1000 | year |
|--|-----|------|------|

Outpatient Visits

| | | | |
|--|-----|------|------|
| | n/a | 1000 | year |
|--|-----|------|------|

Other

(e.g. Pharmacy or Imaging)

| | | | |
|--|-----|------|------|
| | n/a | 1000 | year |
|--|-----|------|------|

2 Estimated Cost of Each Medical Event

Please enter a cost estimate for each medical event. When multiplied by how often each event occurs, the total costs are calculated and reported on a PMPM basis to establish the baseline expenses for a typical HNHC member before social services are added.

| | |
|-------------------|-------------|
| Hospital Day | \$ 1,975.00 |
| SNF/Rehab Day | \$ 419.00 |
| ED Visit | \$ 679.00 |
| Falls | \$ n/a |
| Outpatient Visits | \$ n/a |
| Other | \$ n/a |

3 Result: Calculation of Baseline PMPM Cost

| | |
|----------------------|-----------------|
| Hospital Admission | \$654.12 |
| Hospital Readmission | n/a |
| SNF/Rehab Admission | \$142.21 |
| ED Visit | \$47.87 |
| Falls | n/a |
| Outpatient Visits | n/a |
| Pharmacy or Other | n/a |
| Total | \$844.19 |

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

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) | <input type="text" value="100"/> % | <input type="text" value="44.0"/> | 100.0 | 4400.0 |
| Transportation | (Ride) | <input type="text" value="n/a"/> % | <input type="text" value="n/a"/> | n/a | n/a |
| Home Modifications | (Homes) | <input type="text" value="n/a"/> % | *see footnote 2 | n/a | n/a |
| Housing | (Bed Night) | <input type="text" value="n/a"/> % | <input type="text" value="n/a"/> | n/a | n/a |
| Counseling: Legal, Financial and Social Support | (Hour) | <input type="text" value="n/a"/> % | <input type="text" value="n/a"/> | n/a | n/a |
| Overall Care Management | (Call, Visit) | <input type="text" value="n/a"/> % | <input type="text" value="n/a"/> | n/a | n/a |
| Other | (e.g. Education) | <input type="text" value="n/a"/> % | <input type="text" value="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.

1 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 | |

2 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 HHNC 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.

1 Expected Changes in Medical Utilization

The first column contains your medical events selections. Under "Utilization Impact—All HNHC Members," please select the expected utilization changes for each event using the sliders. The financial implications of changes are dynamically calculated and are shown once all the input fields have been populated.

You will notice that with every entry or movement of the slider bar, the financial implications are dynamically calculated and shown.

| Utilization Impact - All HNHC Members | | | | |
|---------------------------------------|---------|------|--|---------|
| Hospital Admissions | - 50.0% | 0 | | - 100 + |
| Hospital Readmissions | n/a | 0 | | - 100 + |
| Length of Hospital Stay | - 10.0% | 0 | | - 100 + |
| SNF/Rehab Admissions | - 72.0% | 0 | | - 100 + |
| SNF/Rehab Admissions LOS | - 0.0% | 0 | | - 100 + |
| ED Visits | - 70.0% | 0 | | - 100 + |
| Falls | n/a | 0 | | - 100 + |
| Other (e.g. Pharmacy or Imaging) | n/a | 0 | | - 100 + |
| Outpatient Visits | n/a | -100 | | + 100 + |

2 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.

1 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.

1 Select Your Payment Systems

In this section, you will make selections that determine the division of financial gains. This division depends both on the payment method and level at which the health sector partner pays its social service partner for its services. You can select any or all of the five payment methods to make comparisons. A summary of the allocation of the overall net financial benefits between the partners will appear on the next page.

| | | |
|-------------------------------------|----------------------------------|--|
| <input checked="" type="checkbox"/> | Full Cost Recovery (FCR): | CBO receives payments that equate to its costs |
| <input checked="" type="checkbox"/> | Fee for Service (FFS): | CBO receives payments for each service unit |
| <input checked="" type="checkbox"/> | Case Rate: | CBO receives payments to provide a specified social service for a given period |
| <input checked="" type="checkbox"/> | Capitation: | CBO receives PMPM payments to provide an array of social services |
| <input checked="" type="checkbox"/> | Gain Sharing: | CBO receives a combination of FFS payments and a share of the financial gains |

2 Select Your Payment Levels

Full Cost Recovery

Here, the community-based organization (CBO) receives from the health sector partner the full payment for the CBO's actual costs. The payment is set retrospectively, meaning the charges are billed after the service has been delivered and the costs are then calculated.

FFS - Fee for Service

Unlike the cost reimbursement system, FFS is a prospective one, meaning the fee set by the CBO is known in advance of the service being delivered. Under FFS, the CBO receives this stipulated fee from the health sector partner for each unit of service delivered. In comparison with full cost recovery, the result here may differ for two reasons. First, results can differ when actual costs diverge from expected levels. Second, the CBO may set the fee at a level that includes a markup (profit margin) over costs.

Below, you need to select the markup percentage above expected costs, if any, that the CBO is to receive.

Set a markup percentage over expected unit service cost

10.0% 100

Case Rate

A CBO and its health care partner might agree on a case rate system, rather than paying and receiving payment for each service unit. A case rate means that the CBO provides a stipulated social service to an individual for a specified time. For example, if the CBO agrees to accept a case rate to provide needed nutritional support to an HNHC beneficiary for a defined period, the rate does not change regardless of the service intensity. In this example, the service intensity refers to the (uncertain) volume of meals to be provided within that one-month window

Set a markup percentage over expected case cost

10.0% 100

Capitation

Under this system, a per eligible beneficiary per month payment is set and made to the CBO. (An eligible beneficiary for the calculator's purposes is an HNHC patient for whom it would be appropriate to provide at least one social service.) Under a capitated system, the CBO would incur the costs associated with the provision of all social services required by the beneficiary. For some eligible beneficiaries, their needs may require safe and stable housing or home modifications; for others, non-emergency transportation and nutritional support may be appropriate. (CBOs would need to be very careful to contract under this system. To avoid substantial losses from excessive costs, they would need to be accurate in predicting the number of beneficiaries who will require each social service during the contract period.)

Set a markup percentage over expected per beneficiary cost

10.0% 0 100

FFS - Fee for Service with Gain Sharing

Gain sharing is an alternative payment system that evaluates financial outcomes and distributes a portion to the CBO. That system can address not only concerns over the costs of social services but can stimulate efforts to incentivize greater effectiveness. There are several variants of gain-sharing models. The one modeled in the calculator is a hybrid. The CBO receives a fee to cover its anticipated costs plus a share of any net financial benefits from the partnership. It is possible to consider both symmetrical and asymmetrical systems. The former would involve both some downside risk for the CBO in the event of losses and upside potential for gain sharing. In any event, the CBO would be guaranteed to receive its agreed-upon fees. It is that symmetrical system that is modeled in the calculator.

Below, use the slider bar to select the gain share percentage that the CBO is to receive.

You should also consider the possibility that gain sharing can boost program effectiveness by better aligning the interests of both partners. (Effectiveness is measured by the net financial gains from integration.) The default setting is 0% if you choose to ignore this feature.

Set CBO gain share percentage

30.0% 0 50

You also have the option of considering the possibility that gain sharing can boost program effectiveness by better aligning the interests of both partners. (Effectiveness is measured by the net financial gains from integration.) The default setting is 0% if you wish to ignore this feature.

Enhanced effectiveness under gain sharing

0.0% 0 20

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.

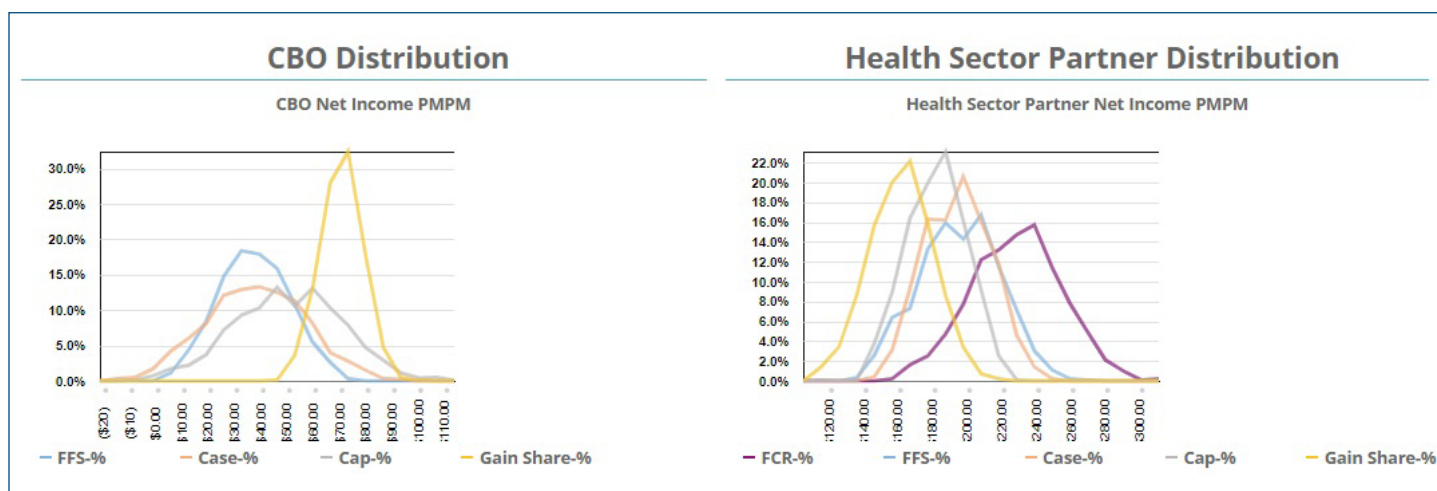
| Payment System Comparison | | | |
|---------------------------|------------------------------|-------|------------------------------|
| Payment System | Health Sector Partner | | CBO |
| | PMPM (Monthly net Income) | ROI | PMPM (Monthly net Income) |
| Full Cost Recovery | \$211.27 | 60.4% | \$0.00 |
| 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 | <input type="text" value="0"/> | <input type="text" value="35"/> | <input type="text" value="35"/> | <input type="text" value="35"/> | <input type="text" value="63"/> | <input type="text" value="211"/> | <input type="text" value="176"/> | <input type="text" value="176"/> | <input type="text" value="176"/> | <input type="text" value="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.