Center for Sharing Public Health Services

Rethinking Boundaries for Better Health

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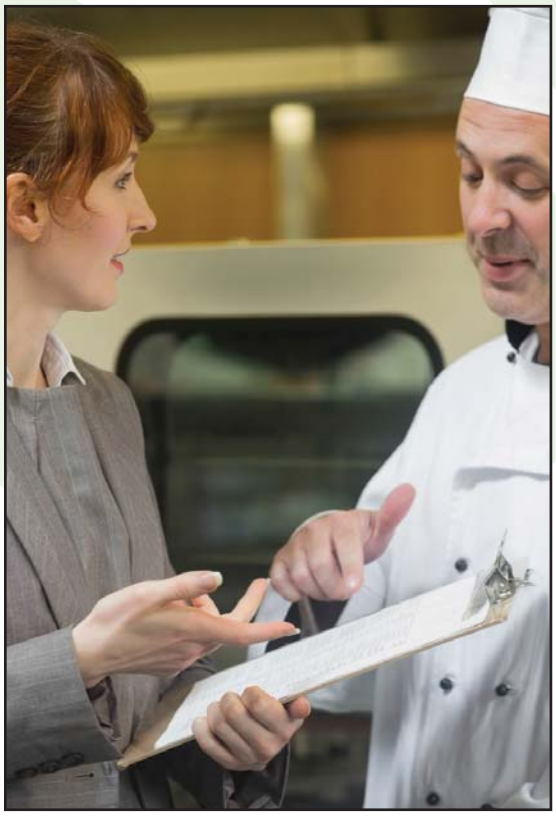
DETERMINING AND DISTRIBUTING COSTS OF SHARED PUBLIC HEALTH SERVICES

APRIL 2015



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ABOUT THIS REPORT

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EXECUTIVE SUMMARY

This document is meant to assist public health officials as they determine the full cost of a shared service[1] and decide how to distribute that cost across jurisdictions.

The first step in this process is determining the full cost of a service to be shared. Full cost is made up of direct costs and indirect costs. Direct costs are generally easier to identify and measure and are attributable only to a specific service, so they can be somewhat straightforward to quantify. Indirect costs or overhead costs — those costs attributable to more than one program, usually for support functions shared by several services or an entire organization — are more complex to define. Public health officials must first determine which indirect costs are relevant to the service, then they must decide what portion of those relevant costs apply to the service.

The second step in the process is to decide how to apportion among the partners the cost of the service to be shared, once the full cost is calculated. This document provides some concepts and techniques for apportioning costs across jurisdictions, and analyzes the benefits and shortcomings of each. Every strategy demands a trade-off. Some are simpler, but at the risk of over-simplifying the financial governance. Some require cost measurement strategies that might be expensive or infeasible. Others might place costs disproportionately across participating jurisdictions sharing the program. See *Figure 1* for an overview of the cost-sharing methods discussed.

Determining and apportioning costs can be very complex. Public health officials are encouraged to seek advice from their organization's financial staff or other accounting experts for more details.

Figure 1. **Summary of Cost-Sharing Strategies**

Strategy	Definition	Comments
Equal share	Total costs divided by the number of participating local health jurisdictions	Simple, but overlooks differences in cost drivers, prevalence, and other factors that affect total costs
Per capita sharing	Total costs divided by the proportion of the population served that resides in each partner jurisdiction	Most effective for jurisdictions roughly the same size with comparable needs for the service being shared
Cost plus fixed fee	Per capita sharing plus a fixed payment to one jurisdiction to cover potential cost increases	Effective when the capability or service involves step-fixed costs that are difficult to predict or plan
Ability to pay	Total costs divided by each partner jurisdiction's relative wealth	Can redirect resources from wealthier to less wealthy jurisdictions
Ability to generate revenue	Total costs divided by each partner jurisdiction's relative ability to generate revenue	Can redirect resources from one jurisdiction to another based on revenues
Prevalence	Total costs divided by each partner jurisdiction's relative prevalence of some observable public health problem	Fair and transparent, but requires a good proxy of the underlying public health problem in question
Weighted formula	Total costs are apportioned according to a formula that combines several strategies	Effective way to accommodate multiple partner's cost apportionment needs and priorities; can become quite complex
Fee for service	Total costs are divided by units (i.e., sessions, vaccinations, etc.) of a capability or service delivered	Most effective when the capability or service has a clear and observable deliverable

1. In this document, the term "service" is used in a broad sense covering services, capacities and functions.

INTRODUCTION

The "Great Recession" ushered in a new era for local public health services. Since 2008, state and local governments have reduced their public health workforces by 20 to 30 percent.[2] In this environment of chronic fiscal stress and intense pressure to "do more with less," public health officials are actively exploring new service delivery models that hold the promise of containing the costs of services and maximizing the results of each dollar invested. Cross-jurisdictional sharing (CJS) is a promising means to realize these efficiencies, bolster service effectiveness, or both.[3]

That said, cross-jurisdictional sharing is not easy. It demands substantial investment of time, political will and patience. It also demands careful attention to a unique set of budgeting and accounting challenges. This document is designed to familiarize you with some of these technical financial challenges and how to address them.

You don't need to master managerial accounting, accrual budgeting and other highly technical accounting subjects to develop a cost-sharing plan for cross-jurisdictional sharing. A better strategy is to "know what you don't know."

Your organization's financial staff, auditors, consultants and other experts are great resources. They can help you identify and understand many of the policy and management challenges related to cost measurement and apportionment. The key is to ask them the right questions. To that end, throughout this document you will note a series of essential questions. Asking the right questions allows you to focus your time and attention toward the information you'll need to make the best possible decisions about shared services.

After reading this document you should be familiar with:

- Common methods to identify and determine the full cost of public health services that you want to share.
- How costs and cost behavior can, and should, affect the decision to enter into a service-sharing arrangement.
- Typical methods and strategies to apportion the full cost of shared services across stakeholders.

2. Marlowe, J. (2014). Public Health Funding May Get a Shot in the Arm. *Governing*. Available online at www.governing.com/columns/public-money/gov-a-shot-in-the-arm.html

3. Recent research shows that more than two-thirds of local health jurisdictions are engaged in some sort of cross-jurisdictional sharing arrangement. The most common shared services are emergency preparedness, environmental health, and maternal and child health. For more information visit the National Association of City & County Health Officials *2010 National Profile of Local Health Departments*. Available online at http://www.naccho.org/topics/infrastructure/profile/resources/2010report/upload/2010_Profile_main_report-web.pdf

General Principles

This document is organized around three core principles:

1. **Keep it Simple.** Thorough cost analysis for shared services is inescapably complex. Different jurisdictions employ different methods to measure costs and develop budgets. One jurisdiction may label and cost out a service one way, while another jurisdiction might label and cost out an identical service quite differently. Various organizations use different versions of the ***chart of accounts***, or the set of formal definitions and labels for each type of revenue and expense an organization will incur. To properly measure and share costs in a CJS arrangement you must bridge these differences, so that you are comparing "apples to apples." The old adage that it's "better to be mostly right than exactly wrong" is particularly relevant here. In general, a simple cost analysis and cost-sharing scheme that's intuitive and transparent is much better than a sophisticated system that's difficult to understand.

2. **Know the "Full Costs."** Many of the main costs of public health services are difficult to observe, and even more difficult to measure. How do you know, for example, the portion of an executive manager's time that's attributable to a single program? How do you connect the costs and benefits of broad-based services like marketing, outreach and strategic planning, or overhead expenditures such as vehicle maintenance or liability insurance? How will differences in labor costs, like employee pension contributions, be accounted for? These types of questions require careful attention to both the direct costs and the indirect costs of shared services. Many good service sharing arrangements stumble because the partners ignore or fail to properly account for all the relevant costs.

3. **Beware of "Average Costs."** In this context, ***average cost*** is the cost of a single unit of service, such as a prenatal visit, a restaurant inspection, or an outbreak investigation. "What does this service cost?" might seem like a simple question, but it's difficult to measure in the context of cross-jurisdictional sharing because what a service costs depends in large part on how much of it is delivered and how the service delivery system is organized. And yet, how much is delivered depends on how much it is estimated to cost. It's crucial to know how full costs change as more or less of the service in question is delivered. This requires a dynamic analysis that goes beyond "average costs."

Governance Models

Throughout this guide, the *Cross-Jurisdictional Sharing Spectrum* (*Figure 2,* page 7), developed by the Center for Sharing Public Health Services, will be referenced. This spectrum identifies four main types of cross-jurisdictional sharing arrangements for public health services and shows who bears the costs and risks of shared services. At one end there are informal arrangements, where one jurisdiction periodically delivers services to another jurisdiction or shares some capacity with another jurisdiction. The jurisdiction that receives the service or requests the sharing has little direct say in how and when the service is delivered. At the other end is formal regionalization. Here multiple jurisdictions are served by a single entity of government that delivers all services. This entity is designed to formally assume the risks, costs and decision-making related to the service across the jurisdictions involved.

In-between there are two other categories: service-related arrangements and shared functions with joint oversight. Unlike informal sharing, service-related arrangements involve regular and predictable

sharing of resources. Most are formalized through contracts. If both entities have a formal role in decisions about how and when to deliver the service, then the sharing arrangement is a shared function with joint oversight. Most cross-jurisdictional sharing happens in these two intermediate categories. Throughout this document you will see that how the service is governed is definitively connected to how the jurisdictions involved can share costs.

The rest of this guide proceeds as follows. The next section lays out a short example that illustrates many of the key challenges for cost measurement and apportionment for shared services. After that, core principles of cost analysis are outlined, including what it means to determine the "full cost" of a service, how to identify and measure those costs, and how to determine what a service will cost at different levels of service delivery. The next section is an explanation of the principles of cost allocation (where and how costs are incurred). The final section is a discussion of some cost-sharing strategies for certain types of shared public health services. That is, once the relevant costs and cost behaviors have been identified, how should those costs be apportioned across the partners in a cross-jurisdictional sharing arrangement?

Figure 2. **Cross-Jurisdictional Sharing Spectrum**

Informal and Customary Arrangements	Service-Related Arrangements	Shared Functions with Joint Oversight	Regionalization
• "Handshake" • Information sharing • Equipment sharing • Coordination • Assistance for surge capacity	• Service provision agreements (e.g., contract to provide immunization services) • Purchase of staff time (e.g., environmental health specialist)	• Joint projects addressing all jurisdictions involved (e.g., shared HIV program) • Shared capacity (e.g., joint epidemiology services)	• New entity formed by merging existing local public health agencies • Consolidation of one or more local public health agencies into an existing local public health agency
Looser Integration			**Tighter Integration**

Source: Center for Sharing Public Health Services. Adapted from: Kaufman, N. (2010) which in turn was adapted from Ruggini, J. (2006); Holdsworth, A. (2006).

The Cross-Jurisdictional Sharing Spectrum identifies four main types of cross-jurisdictional sharing arrangements.

Throughout this document you will see that how the service is governed is definitively connected to how the jurisdictions involved can and should share costs.

Figure 3. **Summary of HPM Example**

Governance Structure of HPM program

Service-related arrangement.
County A runs the program and invoices County B.

Full Cost of HPM Program

$500,000

Population

County A: Population = 240,000 or 60% of total
(240,000/400,000=.60)

County B: Population = 160,000 or 40% of total
(160,000/400,000=.40)

Total Population = 400,000

Wealth

County A: Income = $40,000 or 44% of total
($40,000/$90,000 = .44)

County B: Income = $50,000 or 56% of total
($50,000/$90,000 = .56)

Total Income = $90,000

Wealth factor: $50,000/$40,000 = 1.25

Prevalance

County A: Estimated Cases = 12,740 or 70% of total
(12,740/18,200 = .70)

County B: Estimated Cases = 5,460 or 30% of total
(5,460/18,200 = .30)

Total Estimated Cases = 18,200

Usage

County A: Estimated Patients = 1,750 or 70% of total
(1,750/2,500 = .70)

County B: Estimated Patients = 750 or 30% of total
(750/2,500 = .30)

Total Estimated Patients = 2,500

AN EXAMPLE: HYPERTENSION PREVENTION AND MANAGEMENT PROGRAM

The following example will be used throughout this document to illustrate several concepts.

County A and County B are negotiating a sharing arrangement for hypertension prevention and management (HPM). Neither currently has a formal program in this area, but both offer some of these services through a patchwork of partnerships with local nonprofits. County A has a larger population than County B, but County B's median household income is higher than County A's. More information about the demographics of these two hypothetical counties can be found in *Figure 3*.

What would it cost to deliver this service? As with most public health programs, the main costs will be related to personnel, namely public health nurses and a health counselor. The program will also require space and incur other overhead costs. The outreach component will require travel and other costs. For a service sharing arrangement to work, the two counties must decide how to measure and share these costs.[4]

Suppose the counties decide that County A will manage the program and invoice County B for its share of the costs. This is an example of a service-related arrangement, as defined on the *Cross-Jurisdictional Sharing Spectrum*.

The counties could agree to share the full costs equally. This approach is simple and straightforward. However, it ignores many of the program's underlying ***cost drivers*** and possible differences in the need for the service in the two counties. Alternative approaches will be discussed in a later section.

4. To put these questions in the language of cost accounting: 1) What is the full cost to operate this service? 2) What is the best allocation basis for the two counties to share that cost given the relevant range of service output?

FULL COST ANALYSIS

Every public service incurs direct costs and indirect costs. Direct costs plus indirect costs are known as the ***full cost***. It's essential to know the full cost of a program or service before considering how to apportion those costs across partners in a cross-jurisdictional sharing arrangement.

Direct and Indirect Costs

Direct costs are costs attributable only to the provision of a good or service. In the HPM example, the direct costs include the staff who deliver the hypertension screening and outreach services, mileage to travel to outreach sites, outreach planning and other costs related only to HPM services.

Indirect costs are attributable to more than one program, usually for support functions. In the HPM case, they include a portion of the salary for the administrator who will oversee the program, payroll and other central support services, building and maintenance costs for the portion of the facility the HPM program requires, and many others. Indirect costs are often called ***overhead costs***.

The distinction between direct costs and indirect costs hinges on two other concepts — the cost center and cost objective.

A ***cost center*** is a part of an organization that incurs direct costs and is assigned indirect costs. It could be a program, a department, a unit within a department, a grant, a contract, or any other reporting entity. Indirect costs incurred outside a cost center are assigned to it according to some cost allocation basis.[5]

The ***cost objective*** is the purpose or outcome against which costs are measured. Examples could be the number of patients served, the number of restaurants inspected, or the number of disease reports processed. It is usually expressed in terms of a ***unit cost***, or the portion of the full cost that's attributable to each unit of service (full cost / cost objective = unit cost). While in some cases the unit of service (and therefore the unit cost) is easy to define (e.g., one MCH visit or one restaurant inspection), in other cases the output of a service is more difficult to define and measure (e.g., epidemiologic services, or public communication services). In those cases creativity may become necessary, and the best way to define a unit of service may be simply by listing the staff involved in providing that service (e.g.,

5. Some state and local governments have accounting and budgeting rules that say programs that are independently financed — or paid for with specific fees or charges rather than general government resources — do not need to allocate their indirect costs or receive an indirect cost allocation.

Key Questions

Throughout this document you will note a series of key questions. Asking the right questions allows you to focus your time and attention on the information you'll need to make the best possible decisions about shared services.

Key Questions on Full Cost Analysis

1. How should relevant indirect costs be defined and measured?
2. What is the cost objective for the shared service?
3. Will changing the cost objective affect the full cost?
4. Which indirect cost items are relevant for a cost center or program? Which can be shared with other cost centers?

one epidemiology or communications staff person, or portions thereof).

To illustrate these concepts, assume in the HPM example that County A will structure the new HPM program as a stand-alone unit within the Chronic Disease Division of its public health department. In other words, HPM is its own cost center. Assume also it will define its unit cost as the annual cost per patient served.

Given those assumptions, HPM's ***direct labor costs*** will include three licensed nurse practitioners who can administer blood pressure screening, and a health counselor who will guide patients on how to manage hypertension through healthier eating and fitness, and who also will conduct outreach programs throughout both counties. The HPM program also will incur a variety of ***direct non-labor costs*** like supplies and HPM-specific equipment.

At the same time, the HPM program will incur many costs that are not exclusive to it. HPM staff will use services like payroll, accounting, information technology and purchasing. These are considered ***indirect labor costs***. HPM also will require office space within one of County A's facilities, and HPM staff will be covered by county-wide liability insurance. These are examples of ***indirect non-labor costs***. *Figure 4* summarizes the four main types of costs.

The administrator of the Chronic Disease Division will oversee HPM operations, as well as the other programs included in the division. The portion of time that the administrator spends overseeing the HPM program can be considered an indirect cost.

One of the main goals of cost accounting is to connect changes in indirect costs to changes in direct costs. Direct labor costs increase certain indirect costs in predictable ways. For instance, if the HPM program hires a new nurse it also will incur the additional payroll and other indirect costs required to employ that nurse. The same applies to certain indirect non-labor costs such as training and insurance.

Indirect costs are harder to measure and predict when they're not directly connected to direct labor costs. Many indirect costs such as electricity, legal services, strategic planning and others are not closely related to the number of staff or the number of hours worked. At the same time, many of those costs do increase as the amount of the service increases. It's feasible to connect those costs to the level or volume of service through some other cost allocation basis (more on this later).

This example also shows why the cost center and cost objective are so important. If the cost center was defined as the entire Chronic Disease Division, the administrator's salary could be considered a direct cost. This could significantly change HPM's overall unit cost. By contrast, suppose the HPM program was structured with separate cost centers for its key activities such as screenings, health counseling and outreach. In this case, the clinic-based programs would incur a much higher share of the building-related indirect costs, but the outreach cost center would likely incur a

Figure 4. **Direct and Indirect Costs**

Cost Type	Description
Direct labor	Labor costs for staff directly involved in delivering the service
Direct non-labor costs	Supplies and service-specific equipment
Indirect labor costs	Labor costs related to support services; for example, payroll, accounting, information technology and purchasing
Indirect non-labor costs	Non-labor costs related to support services; for example, office space, insurance, utilities, depreciation and data processing

higher portion of travel costs, mobile telecommunications and other services that are not building-related. Different cost centers and cost objectives would mean substantially different cost structures, and different cost structures have important implications for the eventual cost sharing.

More information on methods to calculate indirect costs is provided in the *Cost Allocation and Indirect Cost Calculation* section, which begins on page 15.

Relevant Costs

One of the key questions around a program's full cost is which indirect costs are "allowable" or "reasonable?" Or in the parlance of cost accounting, how are ***relevant costs*** identified? For example, in some cases it's unclear whether staff that contribute marginally to a program's operations — such as development directors, communications staff and others — should be included as an indirect cost. Certain types of training might be helpful, but not essential, for staff to understand their jobs and deliver the service. You may have an interest to define indirect costs as broadly as possible, especially if you can recover those costs through some external funding source.

Keep in mind that there are no national or international standards for government cost accounting. Governments employ a variety of state-specific, local-specific and sometimes funder-specific cost accounting methods. This is often a considerable challenge for cost analysis of shared public health services.

Since there are no national standards for cost accounting, there are no national standards for what constitutes a relevant indirect cost. Each project, program and funder is a bit different.

That said, the federal government has guidelines on relevant cost analysis for state and local governments that receive federal grants (i.e., the types of indirect costs the federal government will reimburse). Many state and local governments also use these guidelines or some adaptation of them for their internal cost accounting.[6]

If the service receives grant funding, the grant requirements may dictate how indirect costs are applied. Program managers will want to notify grant funding agencies well in advance of a service-sharing proposal in order to clarify any applicable requirements.

A full discussion of these guidelines is outside the scope of this document.

Keep in mind that there are no national or international standards for government cost accounting.

Governments employ a variety of state-specific, local-specific and sometimes funder-specific cost accounting methods.

This is often a considerable challenge for cost analysis of shared public health services.

6. Cost accounting and allocation principles for federal government money are developed by the Office of Management and Budget (OMB) and articulated in a publication titled *OMB Circular a-87: Cost Principles for State, Local, and Indian Tribal Governments*. This publication is available online at www.whitehouse.gov/omb/circulars_a087_2004

However, it's worth noting they focus on four main criteria to help define an allowable or relevant indirect cost:

- **Reasonable**: Is the cost ordinary and necessary to deliver the service? Can it be incurred at "market prices?"
- **Allowable**: Is it permitted under the grant or program in question?[7]
- **Allocable**: Can you demonstrate the benefits of the indirect cost to the program or service?
- **Documented**: Is the indirect cost allocation plan documented in an "Indirect Cost Rate Proposal" or other plan? Is the allocation scheme consistently applied, or has it changed recently?

Cost Behavior

A second set of key concepts surrounds how costs change as the level or volume of the service provided changes. This is broadly known as ***cost behavior***. Any expense or cost that your program will incur can be classified in one of three buckets, depending on how that cost behaves in response to changes in the amount of service provided: fixed costs, variable costs, and step-fixed (or mixed) costs.

Figures 5A, 5B and *5C* (page 13) illustrate the relationships between volume/quantity of service and costs for a generic, hypothetical service.[8] The x axis is the quantity of service provided, and the y axis is cost in dollars.

Fixed costs (shown in *Figure 5A* at a level of $50) do not change in response to the amount of service provided.[9] In the HPM case, blood pressure screening equipment is an example of fixed costs. Those equipment costs will stay the same regardless of the number of screenings offered.[10]

Variable costs (shown in *Figure 5B*) change directly in response to the amount of service provided. In the example in the figure, each additional 10 units of service increases the total cost by $10, and that rate of change is constant from 10 to 100 units of service (i.e., the relationship can be depicted as a straight line). For the HPM program, variable costs might include copies and other office supplies needed to process physician referrals, or mileage required to travel to outreach sessions, among others.

Step-fixed costs or ***mixed costs*** (shown in *Figure 5C*) have both a

7. Note that the allowable criterion draws a crucial distinction of cost vs. price. Cost is what you give up to get something. It can include money, time, accepting risks you cannot manage and, most importantly, the opportunity to invest time or money in some other project. Price is the market rate or "sticker price," usually in dollars, of a good or service that you purchase. There's an old saying — "beware the high cost of low price." Products and services with comparatively low prices often cost a lot more — in terms of time, maintenance and replacement costs — than those with higher prices. In the context of allowable costs the opposite is also true. If one good or service accomplishes the same objective at a lower price, then it is the more allowable cost.
8. The numbers in *Figures 5A, 5B, and 5C* are provided to illustrate each cost category and do not connect to the HPM example described throughout this document.
9. *Fixed Cost* can mean different things in different settings. In public finance and in this document, the term is used to indicate a cost that does not change in response to the volume of service delivered.
10. This is true for most practical purposes, but even fixed costs may vary at some point if the volume of service provided increases dramatically. For example, if the number of patients served by the HPM program increases by 100 fold, more sturdy screening equipment may be necessary to withstand the intensive use due to that increase.

fixed and a variable component. In most cases, a step-fixed cost is fixed over some range of output and then increases or "steps up" at some higher level of service volume. In the example shown in the figure, cost is fixed at $20 from 0 to 30 units of service. At 40 units of service that total cost steps up to $40, where it stays fixed through 60 units of service, and so on.

In the HPM program, for example, the direct labor costs could be step-fixed costs. One nurse may be able to serve up to, say, 800 people. If the number of clients increases above that level, the program will require an additional nurse, and the salary and benefit costs will "step up." The cost will then remain fixed until 1,600 clients. If more than 1,600 clients are enrolled, a third nurse will need to be hired, and the cost will "step up" again, and so on.[11]

Here are a few additional points about cost behavior.

1. Each program or service is likely to include a combination of fixed, variable and mixed costs. Therefore the total cost of a program will usually include fixed, variable, and mixed costs.

Figure 5A. **Relationship Between Fixed Costs and Quantity of Service**

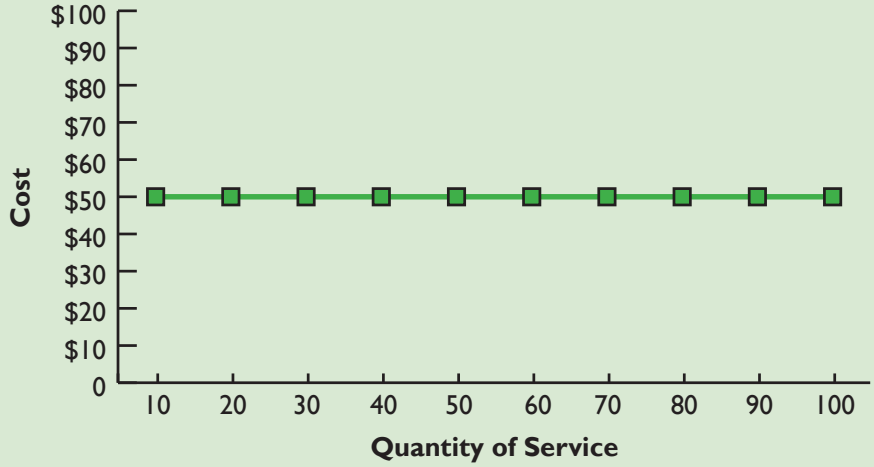


Figure 5B. **Relationship Between Variable Costs and Quantity of Service**

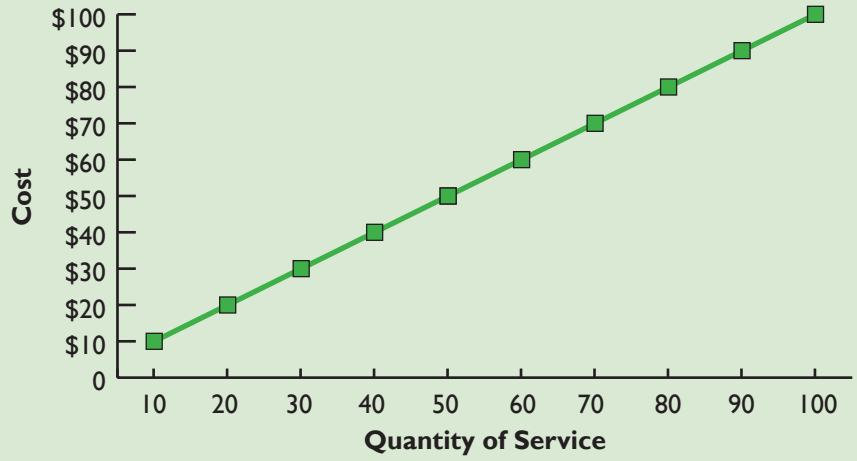
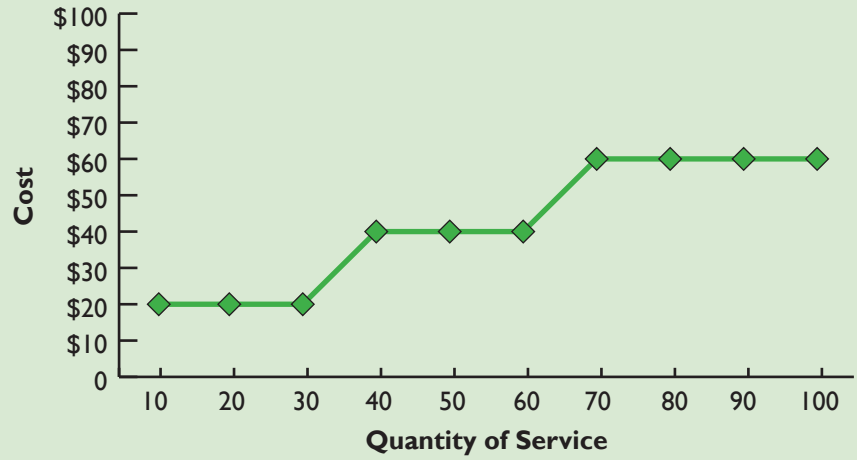


Figure 5C. **Relationship Between Step-Fixed (Mixed) Costs and Quantity of Service**



11. This also illustrates economies of scale. As HPM's fixed costs are spread over a higher volume of service, the average cost per client decreases.

2. The same type of expense can fall in different categories for different programs. In other words, what makes an expense fixed, variable, or mixed is the combination of the characteristics of the expense ***and*** the program in which the expense takes place. For example, mileage for a home visiting program will probably be considered a variable cost because adding more clients in the program means there will be more home visits and more miles travelled. But mileage in an outreach program where staff meet clients in a community health center or outreach clinic could very well be a fixed cost, because staff will travel the same distance to serve a variable number of clients who will show up at the clinic. The same can be said for staff expenses. In some programs, one staff member may be able to serve a wide range of number of clients, and labor would be a fixed cost (e.g., the driver of a van who transports laboratory specimens from a clinic to a laboratory). For other programs, the cost of labor may increase as a direct result of the number of clients served, and labor would be a variable cost (e.g., in a mental health inpatient unit where each staff member is assigned to monitor one patient). And for yet other programs, personnel costs may fall in the category of mixed costs, meaning that one staff member may be able to serve an increasing number of clients up to a certain limit, after which a second staff member will be necessary. For example, an immunization nurse may be able to give shots to up to 40 children a day. Therefore the labor cost is constant from zero to 40 clients. If the average number of clients exceeds that threshold, a second nurse will need to be hired and the cost of labor will "step up."

Effective, cost-based decision-making demands a thorough understanding of how a service incurs different types of costs. When partners enter into a sharing agreement, in many cases the volume of services provided will change as a result of the agreement. Only after reaching a deep understanding of the behavior of different program expenses in relation to the volume of services provided can the costs be apportioned in an appropriate and acceptable way. Consider the following example.

Assume for a moment the HPM program shared by County A and County B has fixed costs of $182,200 and variable costs of $40 per client. The fixed costs are mostly for the health counselor, equipment and the vehicle used to drive to the outreach stations in the community. The variable costs are for items like mileage and supplies. The program also has mixed costs, primarily the three nurses' salaries and benefits. Three nurses can serve up to 2,500 clients, after which point a fourth nurse will need to be added. Also assume that right now the HPM program serves 2,000 clients, but could serve up to 2,500 at current staffing levels (because the cost for three nurses remains stable at $217,800 up to 2,500 clients). A third potential partner, County C, offers to contribute $100 per client for an additional 500 clients. Should County A and County B engage County C on these terms?

HPM's cost behavior is outlined in *Figure 6*. Given its fixed, variable, and mixed costs, at 2,000 clients

Figure 6. **Example of Cost Behavior**

Number of Clients	Fixed Costs	Variable Costs	Mixed Costs	Total Costs	Average Cost/Client
1,500	$182,200	$60,000	$217,800	$460,000	$307
2,000	$182,200	$80,000	$217,800	$480,000	$240
2,500	$182,200	$100,000	$217,800	$500,000	$200
3,000	$182,200	$120,000	$290,400	$592,600	$198

the average per client cost is $240. If HPM scales up to serve 2,500 clients, its average cost will decrease to $200 per client. Even with this decrease, the average cost is well above the $100 per client that County C is offering. However, one needs to keep in mind the relationship between fixed, variable, and mixed costs. HPM can take on 500 more clients without incurring additional fixed or mixed costs. With that in mind, the new cost to add a client is only the additional variable cost (***marginal cost***).

Put differently, the average cost of each client at 2,500 clients is $200, but the marginal cost to move from 2,000 to 2,500 is $40 per client: ($500,000 – $480,000)/500. If HPM is reimbursed $100 per client, the marginal "profit" is $60. If County A and County B make this decision "at the margin," or with reference only to the marginal cost, they should enter into the proposed service sharing arrangement with County C.

In the HPM case, scaling up to full capacity (2,500 clients) will mean that County A and County B could not take on additional clients without taking on additional mixed costs. If the number of clients increases above 2,500, for example to 3,000, a fourth nurse will need to be hired, and the mixed cost will move from $217,800 to $290,400.[12] This will initially increase the cost per client.

The key takeaway here is that when considering a service sharing arrangement, be sure to consider how the agreement is likely to affect the volume of services provided, and how the change in volume of services in turn will affect the fixed, variable, and mixed costs for the program. Then you can calculate both the marginal costs and the ***opportunity costs*** (i.e., the benefits that could have been realized from maintaining the status quo or doing something other than sharing) of entering into the sharing agreement.

COST ALLOCATION AND INDIRECT COST CALCULATION

Cost allocation is a process to determine the total cost (i.e., direct and indirect costs) of a cost center (i.e., a program, department or grant). A cost allocation basis is helpful when determining some costs, especially indirect costs. The ***cost allocation basis*** is a metric or table that identifies each cost item and what factors affect the level of costs incurred. The latter is often called a cost driver. A good cost

Key Questions on Cost Behavior

1. What proportion of the total costs are fixed costs? What proportion are variable costs?
2. Does the service involve any step-fixed or mixed costs? If so, when do those costs "step up?"
3. What are the marginal costs at different levels of service volume? How do those marginal costs compare to the average costs?
4. Can the service benefit from ***economies of scale***? If not, why not?

12. Of course one option is to allocate to the program a *portion* of the time of another nurse. While that would affect the amount of the change in cost, stepping above 2,500 clients would still result in an increase in mixed costs (i.e., labor).

driver is a reliably observable quantity that affects the cost of delivering the service in a consistent and predictable way.

Figure 7 lists some typical cost allocation bases for some of the most common costs. Note that in many instances most of these costs will fall in the category of indirect costs, but that determination can vary depending on the specific characteristics of the program and its cost objective. Each cost allocation basis is, in concept at least, easy to compute with existing administrative data, if available.

Going back to the HPM example, County A has developed a cost allocation plan for its indirect costs, using an allocation table similar to that shown in *Figure 7* (data not shown). The total cost of the program is calculated at $500,000 (*Figure 8,* page 17). The indirect costs account for 26.7 percent of the total cost ($133,512/$500,000).

An alternative to calculating indirect costs through a cost allocation base is to develop an indirect cost rate. An indirect cost rate is a single percentage typically applied to total direct costs. That single percentage is designed to capture the amount of indirect costs expected in support of or directly related to direct costs. An indirect cost rate is predicated on the assumption that indirect costs are distributed uniformly within an organization across its cost centers. This assumption may or may not be totally true. Also important to note is that funders often set indirect cost rates that may or may not reflect true indirect costs. Federal indirect rates are usually established looking back at one or more projects and considering prior year's actual indirect costs and are often closer to the actual indirect costs incurred by an organization.

Indirect cost rates work well when many of the data needed to develop a cost allocation plan are not available. In many of these cases the only observable data on cost are the salaries and benefits of the individuals directly employed in activities related to that service. An indirect cost rate leverages that information to capture some basic understanding of how much indirect cost one jurisdiction incurs.

To illustrate, recall that in the previous HPM example, County A computed total costs by using itemized indirect labor and non-labor lines (*Figure 8,* page 17). This requires access to the information necessary to assess those indirect costs (i.e., a cost allocation table) specifically for the HPM program. County A could follow an alternative approach, presented in *Figure 9,* page 17.

In this case, County A has applied a general indirect cost rate of 25.2 percent of direct costs. This rate is designed to cover the payroll, insurance, information technology and other general county overhead that HPM employees will require. County A may arrive at this rate by conducting an in-depth ***time use or***

Figure 7. **Typical Cost Allocation Bases and Sample Cost Allocation Plan for Program Costs**

Cost Item	Potential Allocation Basis ("drivers")
Accounting	Number of transactions processed
Auditing	Direct audit hours
Data processing	System usage
Depreciation	Hours that equipment is used
Insurance	Dollar value of insurance premiums
Legal services	Direct hours
Mail	Number of documents handled
Motor pool	Miles driven and/or days used
Office machines	Square feet of office space occupied
Management	Number of employees; total payroll
Procurement	Number of transactions processed

time-in-motion study to determine how much time on average employees in ***internal service centers***, like payroll, devote to serving employees from other areas of county government. In the absence of that information, many jurisdictions apply the allowable general ***overhead cost rate*** identified in the guidelines for federal and state grants, or simply adopt the indirect cost rate allowable by a funder. Note that in this example, the total cost of the program calculated using an indirect cost rate is lower than the total cost that was calculated using an itemized cost allocation table. ***Using an indirect cost rate approach is simpler, but may produce results that are higher or lower than those of an itemized cost allocation table.***

Figure 8. **Annual Total Cost Estimate of HMP Program**

	Units	Unit Cost	Total
Nurses: salaries and benefits	3	$72,600	$217,800
Health counselor: salaries and benefits	1	$69,487	$69,487
Mileage	13,000	$0.50	$6,500
Outreach planning (consultant)	1	$15,000	$15,000
Medical supplies	N/A	$57,701	$57,701
Subtotal direct costs			$366,488
Indirect labor costs*	1	$87,893	$87,893
Indirect non-labor costs*	1	$45,619	$45,619
Subtotal indirect costs			$133,512
Total HPM program costs			$500,000

* Indirect costs computed using a cost allocation table (data not shown).

Figure 9. **Indirect Cost Calculation Using an Indirect Cost Rate**

	Units	Unit Cost	Total
Nurses: salaries and benefits	3	$72,600	$217,800
Health counselor: salaries and benefits	1	$69,487	$69,487
Mileage	13,000	$0.50	$6,500
Outreach planning (consultant)	1	$15,000	$15,000
Medical supplies	N/A	$57,701	$57,701
Subtotal direct costs			$366,488
Indirect costs: 25.2 percent of direct costs*	1	$92,355	$ 92,355
Total HPM program costs			$458,843

* Indirect cost calculated using a flat indirect cost rate developed separately (data not shown).

Key Questions on Cost Allocation

1. Can one partner bill the other partner(s)? If not, then who should perform the cost allocation?
2. What are the most appropriate cost drivers for the indirect costs?
3. How do different definitions of the cost driver(s) affect each partner's share of the full cost of the service?
4. How is the cost allocation plan defined?
5. How would changes to the cost allocation plan affect each party's share of the allocated costs?
6. How often should the cost allocations take place?

In some cases, a hybrid approach is possible. For example, some (but not all) indirect costs (such as rent) are itemized and charged using a cost allocation table, and a general overhead cost rate is then applied to cover the indirect expenses that cannot be allocated through an allocation table. In this case, the overhead cost rate will be lower than the full indirect cost rate to reflect the fact that it only covers some, not all, indirect costs.

Indirect cost rates are challenging to develop because they are data and labor intensive. That said, once developed, they are a straightforward way to allocate indirect costs in the absence of the basic information, or the political desire, needed to construct a suitable cost allocation plan.

COST APPORTIONMENT STRATEGIES FOR SHARED SERVICES

General Principles

With the core principles of cost measurement analysis in place, some concepts and techniques for apportioning costs in cross-jurisdictional sharing arrangements will be discussed. In this context, cost sharing (or apportioning) describes how the parties to the service sharing arrangement will divide both the direct and indirect service delivery costs (i.e., the total cost of the shared service). In some sharing arrangements involving two jurisdictions, this may be as simple as one party billing another for a half of the full costs. Other arrangements are far more complex and demand attention to a variety of formulas and other assumptions.

At the outset, keep two essential points in mind. First, there is no "cookie cutter" approach to cost apportionment. Each cross-jurisdictional sharing arrangement is unique, so each arrangement demands its own scheme to distribute the shared costs.

Second, there is an old saying about partnerships that is especially relevant in this context: "If you have to compute the costs of the partnership to the last dollar, you really can't afford to be partners." Your approach to cost sharing should be transparent and consistent, but also flexible and adaptable. Like budgets, cost-sharing schemes are plans based on assumptions about how citizens will use the service in question. How much of that service is really needed, and how much it actually costs, might deviate substantially from what's expected. When this happens, the cost to each partner of the shared service will be quite different than expected. If the sharing arrangement is based on trust, the parties will tolerate deviations from the expected cost incidence. If necessary, they will renegotiate that arrangement. If that trust is absent, the parties may see this deviation between expected and actual costs as a reason to re-visit or even reject the arrangement.[13]

Effective cost-sharing agreements will serve to strengthen trust by anticipating issues and transparently addressing them, and will provide mechanisms for handling conflicts should they occur.

In the HPM example, suppose the counties agree in advance to share the full costs equally. This approach is simple and straightforward. However, it ignores many of the program's underlying cost drivers. County A has a larger population than County B, so more of the participants will probably come from County A. Simply splitting these costs "50-50" means County B likely ***subsidizes*** County A, an

13. The Government Finance Officers Association has identified a few key factors to consider when deciding how often to allocate shared costs. Those factors include: complexity of the calculation; changes in grant requirements; purpose for which the allocation is to be used; implementation of new financial information or enterprise resource planning systems; changes in the government's administration; and a structural change in the government.

arrangement County B might not find acceptable.

The problem is how to find a better alternative. County A could bill County B for each County B resident who participates in the program. They could split the costs according to some observable cost allocation basis like population or median household income. A more cutting-edge scheme might be to share the costs according to the prevalence of the chronic diseases the HPM program is designed to prevent.

Each of these strategies demands a trade-off. Some are simpler, but at the expense of acceptability. Some require cost measurement strategies that might be expensive or infeasible. Others are more feasible, but might place costs disproportionately on the population the program is designed to serve.

These are the typical challenges of cost apportionment for cross-jurisdictional sharing arrangements.

For most informal and customary arrangements, and for service-related arrangements, the basic challenge is how to apportion costs that are incurred by one party but spent on the others. This can include direct costs, such as staff who are employed by one party but deliver a shared service in another jurisdiction. It can also include indirect costs, such as the time one party's administrator spends monitoring and managing the program. In these types of agreements, one party typically bills the other accordingly or assesses a charge-back that captures the other party's portion of the full costs. In most cases, that billing is connected to the level of service delivered to the counter-party.

If there is no clear way to measure the level of service, it's common to bill or charge-back the direct costs plus an additional proportion of direct costs. That additional proportion covers the indirect costs. The logic here is that most indirect costs are directly related to the level of direct costs. This is especially true for personnel, where salaries and benefits are a direct cost, but the payroll, insurance, information technology and other costs needed to equip that staff to work are indirect costs.

By contrast, for shared functions with joint oversight and for regionalized services the parties involved in the arrangement usually incur costs according to a pre-defined plan that may or may not relate to levels of service provided. Many of these plans connect costs to some underlying indicator or proxy of potential service use rather than actual observable service use. This is especially true for preventative services, foundational capabilities (such as epidemiologic support), or general outreach programs that do not have a clearly observable output or client. In many of these cases costs are also shared in ways consistent with each party's up-front investment in the sharing arrangement. This is quite different from a simple billing or charge-back procedure that simply shifts costs from one participant to another.

Costs do not accrue equally across every observable instance of the allocation metric, therefore cost calculated for one jurisdiction may not necessarily be applicable to another.

Returning to the HPM example, say the HPM staff would like to do a targeted outreach effort to draw attention to an upcoming blood pressure screening event. To do this, HPM staff might request County A's information services staff to prepare a mailing list of potential outreach program participants in both County A and County B. Both counties agree in advance that County A will bill County B for its portion of those information services' indirect costs on the basis of the percentage of addresses that are County B

residents. But to compile this list, say the information services staff must take additional steps to track down information on County B residents. In this example, the cost driver is not exactly the same across both counties. As a result of using this strategy to charge both counties, County A is subsidizing (albeit to a small degree) County B's portion of the shared costs. An alternative might be to measure the number of hours or percentage of total time on this project attributable to gathering information specifically on County B residents. And yet, the additional time and effort to gather that information might far outweigh the benefit of more precise cost allocation.

This is a relatively simple example, but it illustrates that cost allocation basis tables and cost apportionment models come with trade-offs that all the parties involved must understand and agree to up front. Without that agreement, the success of the shared service arrangement may be jeopardized.

A cost-sharing strategy is usually negotiated within the context of a broader discussion on the general governance of the shared agreement. Some officials may wish to apportion decision-making authority over budgets, service levels, oversight for quality, etc., in a manner that mirrors the selected cost-sharing model. For example, some governments will want 3/5 of the seats on an oversight body if they are paying 3/5 of the cost. While these elements act as complementary components, this document only discusses the cost-sharing models.

The premise for any cost-sharing strategy is that the full cost of the service being shared must be estimated first, using the methods described in this document. Once the total cost is calculated, the parties can decide how to share that cost.

When the cost is calculated using cost allocation tables, a cost-sharing plan can be developed that identifies how the parties in a sharing arrangement will pay for the relevant costs, based on each party's cost.

These plans follow several different formats and, as mentioned, there is no standard or correct format. Each sharing arrangement will demand specific attention to some particular cost sharing concerns. This approach works best when it's possible to observe where and when costs are incurred relative to the participants in the cross-jurisdictional sharing arrangement.

When a computation of all the direct and indirect costs incurred separately by each jurisdiction is not possible, there are several other ways to develop a cost-sharing strategy based on the total cost of the service being shared. Information from *Figure 8* (page 17) will be used to illustrate some alternatives. As you will recall, this table presents a hypothetical estimation of the annual costs for the HPM program. It includes the four main types of costs — direct labor, direct non-labor, indirect labor, and indirect non-labor. These costs have been predetermined through cost analysis and cost allocation, as described earlier. According to this table, the estimated full cost of the HPM program for a given year is $500,000.

The following strategies also can be applied to services for which the full cost is calculated using an indirect cost rate. (Please refer to the information about the demographics of these two hypothetical counties on page 8 while you review the following examples.)

Equal Share

Total costs are divided equally across all participating jurisdictions. This is more typical for informal and customary arrangements. It's also common for preventative services and other activities where it's not possible to observe who "receives" or "uses" the service, or to observe all the relevant indirect costs in a consistent and predictable way. But

as mentioned earlier, equal share approaches sometimes contain implicit subsidies that may not be agreeable for policymakers.

On an equal share basis, County A would keep $250,000 and would invoice County B its equal share of $250,000.

Per Capita Sharing

Total costs are divided by the proportion of the population that resides in each partner jurisdiction. This approach is good for services without an observable "client" or discrete individual services. It's less effective when population size is not the best available cost driver, or when the populations in the jurisdictions involved have substantially different characteristics that may affect their utilization of the shared service.

Per capita sharing is often the simplest and most transparent way to share costs. It is easy to apportion and to explain, and when the differences in the characteristics of the population in each jurisdiction are not extreme, it may be an acceptable model for the sharing partners.

To apply this method to the HPM example, first assume that County A's population is 240,000 and County B's is 160,000. Or, put differently, 60 percent of the population is in County A and 40 percent is in County B. On that basis, County A would pay $300,000 ($500,000 X .60), and it would bill or charge-back County B for $200,000 ($500,000 X .40).

Cost Plus Fixed Fee

Personnel costs are often step-fixed costs, and it can be quite challenging to know when those costs will "step up" at higher levels of service delivery. To account for that uncertainty, some strategies call for non-weighted cost apportionment plus some fixed periodic fee. The fee part of the plan is designed to buffer the sharing arrangement against the uncertainty that surrounds step-fixed costs.

In the HPM example, one potential application of this method would be for County A and County B to share costs per capita, but for County A to receive an annual payment of $35,000 at the start of the fiscal year to compensate in advance should County A need to hire an additional nurse during the year. The cost plus fixed fee model also can be used in an arrangement where the overhead for having the service — space, utilities, administration, accounting, etc. — would be apportioned one way, such as equally, and incremental costs, such as those for lab work or medical supplies, are charged based on volume.

Ability to Pay

Some cross-jurisdictional sharing arrangements are designed to make a service available where citizens and clients are otherwise not able to pay for it. In these and similar cases it makes sense to apportion costs according to ability to pay, which can be measured through assessed property values, median household income, or some similar measure of relative wealth. If such a model of cost sharing is chosen, there may be a need for a carefully orchestrated communications plan to explain the benefits of the proposed service sharing agreement to the wealthiest jurisdiction.

In the HPM example, consider the following scenario: County B's median household income is $50,000 and County A's is $40,000. In other words, County B has a smaller population but is wealthier than County A. In this case, the ratio of County B's median household income to County A's is 1.25 ($50,000/$40,000). This is commonly known as a wealth factor.

Recall that an equal share apportionment is $250,000 for each jurisdiction. If that is adjusted by the wealth factor, then County B's share adjusted for ability to pay is $312,500 ($250,000 X 1.25) and County A's is $187,500 ($500,000 - $312,500). This

is substantially different from the per capita apportionment, where County B's share was $200,000 and County A's was $300,000.

Ability to Generate Revenue

This approach is similar to ability to pay in that it is, in part, the result of differences in relative wealth among jurisdictions. However, it also takes into account differences in population size and revenue-generating policies that have been adopted by local and state officials. Using this approach, total costs are shared based on each jurisdiction's ability to generate revenue.

Revenue generating ability often differs across jurisdictions in a sharing arrangement. For example, jurisdictions with larger populations usually will have more taxpayers than smaller jurisdictions. Also, cities and counties often have different taxing authorities and policies which can result in differences in per capita revenue. Additionally, one jurisdiction in a sharing arrangement may have taxable features or services that are not present in other jurisdictions. For instance, the presence of a regional shopping center will likely generate greater per capita sales tax revenue for the jurisdiction in which it is located, even though it's likely that some of that sales tax revenue came from residents of other jurisdictions. And finally, other funding opportunities — notably grants and service contracts — can result in per capita funding differences across jurisdictions for specific services. As a result, the ability to generate revenue often reflects differences in size, wealth and policies among the jurisdictions.

In the HPM example, consider the following scenario: County A's overall ability to generate revenue is 15 percent greater than County B's. Recall that an equal share allocation is $250,000 for each jurisdiction. If that is adjusted by the relative ability to generate revenue, then County A's share would be adjusted to $287,500 ($250,000 X 1.15) and County B's adjusted share would be $212,500 ($500,000 - $287,500).

Prevalence

In this method, the parties share costs according to the prevalence of the public health problem the service is designed to address. In the HPM example, the partners could apportion the total program costs according to observed instances of diabetes or heart disease. The logic here is simple: diabetes and heart disease tell something about the expected number of people with hypertension. They're not perfect measures, but they're good proxies. If the prevalence of the disease is not known, the partners can use a proxy, such as general wealth and socioeconomic status, to project the anticipated need for services in each population. In the HPM example, County B's higher overall wealth suggest a typical resident of County B is at lower risk for hypertension than a typical resident of County A.

Apportionment by prevalence adds substantial complexity because cost sharing is now based on data from a series of measurements not directly related to costs. In this case, those measurements are the incidence of disease or an indicator of socioeconomic status, which can be difficult to measure reliably. This apportionment scheme also ignores that these diseases might have to do with other health behaviors such as smoking or medication adherence, both of which are covered by other programs also administered by both County A and County B. That said, this approach is especially good where population, property values, income and other measures vary too much among sharing jurisdictions to offer meaningful comparisons.

To apply the HPM example, assume that County A will have an estimated 12,740 cases of type 2 diabetes during the coming year, and County B will have an estimated 5,460 cases. This

strategy considers each county's share of the total incidence across both counties. According to that logic, 70 percent of the total cases are expected to occur in County A, and 30 percent in County B. Therefore, County A's share of the total cost is $350,000 ($500,000 X .70) and County B's is $150,000 ($500,000 X .30).

Weighted Formula

This apportionment plan addresses some of the big problems with the per capita sharing approach. For example, in a weighted formula approach, the participants in a CJS arrangement might agree to share total costs according to a combination of population, median household income, usage and other factors. By incorporating these other factors, the cost apportionment method will better reflect differences in fixed costs in urban vs. rural areas, differences in travel distances within each county, and other factors that affect service delivery costs. This approach can be especially good for shared functions with joint oversight, where the formula can be built into the governance structure of the sharing arrangement.

In the HPM example, assume that County A and County B decide to share HPM costs according to a three-factor formula that incorporates population, ability to pay, and prevalence of type 2 diabetes. This formula reflects both counties' shared understanding of the cost structure and cost drivers of the HPM program. The counties, realizing the difference in the prevalence of type 2 diabetes, agree to more heavily weight that difference in prevalence in the cost apportionment formula. They agree to a three-factor formula where population accounts for 25 percent, prevalence accounts for 50 percent and ability to pay accounts for 25 percent of the total cost apportioned to each county.

Recall that County A accounts for 60 percent of the population served by HPM, and County B accounts for 40 percent.

At the same time, County A accounts for 70 percent of the prevalence factor and County B accounts for 30 percent.

Reconfiguring the calculations around ability to pay, total median household income for the two counties is $90,000 ($40,000 + $50,000). County A's share of median household income is 44 percent ($40,000/$90,000) and County B's is 56 percent ($50,000/$90,000).

Weighted formulas are an effective way to negotiate cost-sharing arrangements because they allow the participants to incorporate a variety of political, policy and

Figure 10. **Example of a Weighted Formula**

Step 1: Choose factors and determine their individual weights						
	Population Served		**Prevalance**		**Income Share**	
Cty	**Distribution**	**Weight**	**Distribution**	**Weight**	**Distribution**	**Weight**
A	.60	.25	.70	.50	.44	.25
B	.40	.25	.30	.50	.56	.25
Step 2: Calculate individual weight for each factor						
A	.60 X .25 = .15		.70 X .50 = .35		.44 X .25 = .11	
B	.40 X .25 = .10		.30 X .50 = .15		.56 X .25 = .14	
Step 3: Add the individual weights together						
A	.15 + .35 + .11 = .61					
B	.10 + .15 + .14 = .39					
Step 4: Multiply combined weight by full cost (sum of combined weights must be 1.0)						
A	.61 X $500,000 = $305,000					
B	.39 X $500,000 = $195,000					

other objectives into the cost apportionment process.

Fee for Service

This approach makes sense when the shared service involves a clearly identifiable output or product. The parties in question determine the full cost per unit of service, and then charge one another or other outside entities a fee that covers those full costs.

To apply this in the HPM context, first assume that the HPM program is expected to serve 2,500 clients in the coming year — 1,750 clients from County A and 750 clients from County B. Based on those client figures, the average cost per client is $200 ($500,000/2,500). As such, County A would incur total costs of $350,000 ($200 X 1,750), and would bill County B $150,000 ($200 X 750).

This approach is simple and transparent if data are available on clients' county of residence. The main drawback to this approach is that it assumes the number of clients is the main cost driver for all the relevant costs. This is rarely true. In fact, in this HPM example, outreach costs are affected by a variety of factors not directly related to the number of clients, namely population density, mileage and others.

CONCLUSION

Cross-jurisdictional sharing of public health capabilities and services demands careful attention to costs. Each jurisdiction involved in the sharing arrangement must measure and evaluate the relevant costs, communicate those costs through common terms and concepts, and understand how to distribute those costs with its partner jurisdictions.

SUMMARY OF COST-SHARING STRATEGIES

Figure 11. **Summary of Cost-Sharing Strategies**

Strategy	Definition	Comments	HPM Example
Equal share	Total costs divided by the number of participating local health jurisdictions	Simple, but overlooks differences in cost drivers, prevalence, and other factors that affect total costs	County A: $250,000 ($500,000 / 2 counties = $250,000) County B: $250,000 ($500,000 / 2 counties = $250,000)
Per capita sharing	Total costs divided by the proportion of the population served that resides in each partner jurisdiction	Most effective for jurisdictions roughly the same size with comparable needs for the service being shared	County A: $300,000 ($500,000 X .60) County B: $200,000 ($500,000 X .40)
Cost plus fixed fee	Per capita sharing plus a fixed payment to one jurisdiction to cover potential cost increases	Effective when the capability or service involves step-fixed costs that are difficult to predict or plan	County B: $235,000 ($200,000 + $ 35,000) County A: $265,000 ($500,000 – $235,000)
Ability to pay	Total costs divided by each partner jurisdiction's relative wealth	Can redirect resources from wealthier to less wealthy jurisdictions	County B: $312,500 ($250,000 X 1.25) County A: $187,500 ($500,000 – $312,500)
Ability to generate revenue	Total costs divided by each partner jurisdiction's relative ability to generate revenue	Can redirect resources from one jurisdiction to another based on revenues	County A: $287,500 ($250,000 X 1.15) County B: $212,500 ($500,000 – $287,500)
Prevalence	Total costs divided by each partner jurisdiction's relative prevalence of some observable public health problem	Fair and transparent, but requires a good proxy of the underlying public health problem in question	County A: $350,000 ($500,000 X .70) County B: $150,000 ($500,000 X .30)
Weighted formula	Total costs are apportioned according to a formula that combines several strategies	Effective way to accommodate multiple partner's cost apportionment needs and priorities; can become quite complex	County A: $305,000 ($500,000 X [{.60 X .25} + {.70 X .50} + {.44 X .25}]) = ($500,000 X [.15 + .35 + .11]) = ($500,000 X .61) County B: $195,000 ($500,000 X [{.40 X .25} + {.30 X .50} + {.56 X .25}]) = (500,000 X [.10 + .15 + .14]) = ($500,000 X .39)
Fee for service	Total costs are divided by units (i.e., sessions, vaccinations, etc.) of a capability or service delivered	Most effective when the capability or service has a clear and observable deliverable	County A: $350,000 ($200 X 1,750) County B: $150,000 ($200 X 750)

GLOSSARY

average cost
The total cost divided by the cost objective. The cost of a single unit of service.

chart of accounts
The set of formal definitions and labels for each type of revenue and expense an organization will incur.

cost allocation basis
A metric that identifies where and how costs are incurred.

cost behavior
Costs change as the level or volume of the service provided changes.

cost center
A part of an organization that incurs direct costs and is assigned indirect costs. It could be a program, a department, a grant or some other reporting entity.

cost drivers
Factors that affect the level of costs incurred.

cost objective
The purpose or outcome against which costs are measured. Number of patients served is one example.

direct costs
Costs attributable to only the cost center.

direct labor costs
Labor costs attributable only to one cost center.

direct non-labor costs
Non-labor costs attributable only to one cost center.

economies of scale
Cost per unit generally decreases when the size or scale of a program or service increases, because fixed costs are spread out over more units of output.

fixed costs
Costs that do not change in response to the amount of service provided.

full cost
The total cost obtained by adding direct costs to indirect costs.

indirect costs
Costs attributable to more than one cost center. Indirect costs are often called overhead costs.

indirect labor costs
Labor costs attributable to more than one cost center, usually for support services.

indirect non-labor costs
Non-labor costs attributable to more than one cost center.

internal service centers
Departments, like payroll, that provide services and products to other departments within an organization.

marginal costs
The change in the total cost that arises when the quantity produced has an increment by unit. The cost of producing one more unit of output.

mixed costs
Also called step-fixed costs, they have both a fixed and a variable component.

opportunity costs
The benefits that could have been realized from maintaining the status quo or doing something else.

overhead cost rate
Ratio of indirect costs to an allocation base, such as direct labor.

overhead costs
See indirect costs.

relevant costs
Also known as allowable cost, costs that are reasonable, allowable, allocable and documented.

subsidize
To help another party pay costs they incurred.

time use studies
Also called time-in-motion studies, they are validated means of determining how much time it takes to accomplish a certain task.

unit cost
The portion of the full cost that's attributable to each unit of service.

variable costs
Costs that change directly in response to the amount of service provided.

CENTER FOR SHARING PUBLIC HEALTH SERVICES

The Center for Sharing Public Health Services helps communities learn how to work across jurisdictional boundaries to deliver essential public health services. The Center serves as a national resource on cross-jurisdictional sharing (CJS), building the evidence and producing and disseminating tools, methods and models to assist public health agencies and policymakers as they consider and adopt CJS approaches. The Center is funded by the Robert Wood Johnson Foundation and is managed by the Kansas Health Institute.

Center for Sharing
Public Health Services

Rethinking Boundaries for Better Health