How to Evaluate the Costs and Benefits of Participating in Coordinated Transportation Services

Second manual in a series

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16. Abstract

This Manual focuses on the coordination of transportation resources by social service and community transportation providers. The Manual is designed to assist such providers to understand the potential benefits of coordination, to compare current cost and service patterns to those offered by other providers, to understand the costs incurred when participating in various coordination options, and to compute prices to charge to other agencies when selling transportation services.

The Manual has three messages: 1) in many coordination options there are trade-offs that can or must be made between cost and service variables; 2) in order to participate in coordination programs, agencies must understand all costs which they will continue to incur as well as those that will be experienced for the first time; 3) coordination can be a complex and complicated process which requires serious attention to organizational, administrative and financial details.

This Manual is the second in a series of five. The series is designed to assist transportation providers to be more efficient and effective and to provide high quality transportation services.

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Preface

This Manual is the second in a series of five manuals. The entire series is designed to assist human service agencies and community transportation operators to provide more efficient, more effective, and higher quality transportation services to their riders and clients.

Each Manual in the series covers one specific topic of the many topics that concern such providers. By focusing on one issue or a closely related group of issues at a time, each Manual in the series permits the user to follow one major theme without becoming too sidetracked by other important issues.

At the same time, each of the topics covered by the Manuals is related in an integral way to all the other topics. And each of the Manuals is designed to complement and build upon the others in the series.

A serious effort has been made to keep each Manual concise and to-the-point. Therefore, very little material from one Manual is repeated in another Manual in the series; the reader is referred to that Manual in which the primary discussion of a key topic appears.

The other Manual in the series are

> Manual One. Cost-Analysis for Social Service Agency Transportation Providers.
>
> Manual Three. Predicting Transportation Ridership in a Coordinated Program.
>
> Manual Four. Contractual Arrangements for Coordinated Transportation Services; Performance and Assurance Contracting.
>
> Manual Five. How to Make Your Transportation System More Efficient and Effective.

Their availability is described in the Reference list at the end of the Manual.

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Introduction

This Manual focuses on one topic in the delivery of transportation services to clients of human service agencies - the coordination of transportation and transportation-related services. Coordination, as used in this Manual, means any effort to increase efficiency or productivity, including the purchase of transportation services.

In particular this Manual is designed to help social service agencies and community transportation providers

- to understand the potential benefits of various coordination options,
- to compare current cost and service patterns to those offered by other community providers,
- to understand the costs incurred or the functions retained when participating in various coordination options,
- to calculate prices to charge to other agencies when selling transportation services, and
- to gauge agency potential for coordination, given possible complexities.

This Manual has three major messages:

- in many coordination options there are trade-offs that can or must be made between cost and service variables
- in order to participate in any coordinated program, agencies must understand all costs which they will continue to assume as well as those they will incur for the first time, and, add those costs to the prices charged by other providers or subtract from the revenues received, and
- coordination can be a complex and complicated process which requires serious attention to many organizational, administrative and financial details.

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What is Coordination?

COORDINATION AND ITS OBJECTIVES

Coordination is designed to more efficiently and effectively use the transportation services and resources already available in a community or those resources about to be provided in a community. Coordination of transportation resources can involve a number of different options and methods of service delivery, all with similar goals.

Coordination is any method or approach which allows underutilized resources to be used to their fullest, or which prevents waste and duplication of effort. Coordination approaches can increase the number of clients served for the same cost, or reduce the overall cost of providing service to the same number of clients.

A number of Federal, and some State, agencies encourage coordination of transportation resources because of past problems in the programs that they fund. For example, planners have noted that transportation funds have often been used at the community level in fragmented and possibly duplicative ways. Individual agencies may begin new services when there are many other potential transportation providers already operating in the community. Redundancy of service in some areas may be matched with insufficient service in other areas or for certain target groups.

Congress and many Federal agencies have sometimes responded to these problems by requiring transportation coordination. For example, the Comprehensive Older Americans Act (Amendments of 1978, Section 306a) requires Area Agencies on Aging "to establish effective and efficient procedures for coordination" between the programs assisted under the Act itself and ten major Federal assistance programs not specifically targeted to the elderly.

Section 16(b)2 of the Urban Mass Transportation Act of 1964 (as amended) was set up to provide capital assistance for private nonprofit organizations offering transportation services for the elderly and handicapped. Because of criticism that the 16(b)2 program has fostered fragmented service delivery, recent UMTA policy requires coordination and cooperation among recipients of 16(b)2 vehicles. Many states have developed very strong coordination requirements in their administration of this UMTA program.

There are several well-known models of coordination. The three most common are:

joint-service coordination =	any mutual or cooperative arrangement between public or private agencies and public or private providers for the joint or shared delivery of transportation services.
non-service coordination =	any mutual or cooperative agreement between agencies and providers to jointly engage in non-direct service activities, such as joint maintenance or vehicle purchase.
purchase-service coordination =	any agreement between agencies and transportation providers, public or private for the purchase of specific transportation services or resources (such as excess vehicle capacity) by one agency from another.

Within each of these major models of coordination there are many variations. Table One lists some of the more common options within each of

Table One

Examples of Coordination Options

Major Models	Options	Sources of Information
Joint Service Coordination	Consolidation. All the transportation resources of various agencies and providers are integrated into one single system, with centralized screening, reservations and dispatching	8,9,10,11, 15, 16.
	Brokerage. The transportation resources of various agencies and providers remain with the agencies but are used cooperatively at certain times with coordination and dispatching done by a single agency or broker.	10,12,15,16.
	Time-sharing. Two or more agencies share a single vehicle fleet, each using it at different times.	6,15,16.
Non-service Coordination	Joint vehicle or equipment purchase. Agencies agree on equipment specifications and jointly purchase it, lowering unit costs.	6, 14.
	Joint maintenance agreements. Agencies agree to create a joint maintenance facility, or, a provider buys maintenance from	1,4,11,14.

Major Models	Options	Sources of Information
	an existing community provider.	
	Joint insurance purchase. Agencies achieve cost savings through large-scale, often state-wide purchase of insurance.	Oregon DOT
Purchase-Service Coordination	Contract Service. An agency contracts to buy some or all of its transportation services from an existing community provider (public or private).	1,3,15.
	Ad Hoc Service. An agency buys service as needed from an existing community provider.	3,12.
	Time-sharing. An agency purchases extra hourly capacity from an existing community provider; the vehicle is dedicated to that agency during the purchased time.	6,12.
	Ride-sharing. An agency buys space/rides for its clients to be mixed with other clients aboard a non-dedicated vehicle.	6,16.
	User-side Subsidies. Agencies give clients money to purchase transportation from existing community providers.	

these overall models. Where it is relevant, this Manual will describe and discuss these variations. For example, there is a difference between being a purchaser of service on one hand, and a seller of transportation services, on the other hand. But in order to keep the Manual to manageable dimensions, most of the discussion will focus on the overall models described here.

CAN COORDINATION HELP YOU?

Whether a coordination effort will actually lower costs or increase the quality or quantity of transportation services provided by any agency, depends on community characteristics, client needs and individual circumstances. For example, if an agency has considerable resources tied up in a series of vans, and a coordinated project offers to sell transportation service, the agency would probably not be willing or interested in participating.

Time is also a consideration. A coordination effort which does not currently offer lower rates or better service, may do so in the future, when more agencies in the community have made the commitment to participate. Many agencies have joined coordinated programs because they believe such efforts offer the best long-run cost and service patterns.

There are five major ways in which an agency can benefit from participation in a coordination program. Coordination can possibly:

- reduce the resources (time or money) devoted to any one cost component of service (e.g. maintenance or operations);
- reduce total resources devoted to transportation provision
- increase the amount of service delivered to existing clients'
- increase the number of clients provided current levels of transportation service;
- increase the quality or level of service (as defined) to existing clients.

Note that coordination can affect either the cost of service or the quality or amount of service supplied. It may be possible for your agency to simply "pocket" any money savings that your participation in a coordinated effort brings. You may be able to provide transportation to the same number of clients and use the extra money for other agency services. Or, you may wish to provide transportation services to more clients with the extra savings.

Many of the most studied coordination efforts did not bring cost savings at all but they did substantially improve the quality of service being provided to existing clients. Because the benefits vary, it is important to be specific about which benefits your agency actually wants from coordination. You must

also be clear on the types of benefits actually offered by specific coordinated programs.

Moreover, while a coordination effort can generate significant cost savings in any one cost component, or increase the quality of service provided, agency participation can increase expenses in other cost categories. The most common cost increases arising from participation in coordination efforts are higher overhead and administration charges. In order to determine whether a coordination option is a viable one, agencies have to compare the savings with any additional costs generated.

In short, in order to determine whether coordination is a practical option for your agency you must:

- compare the cost of the services you now provide or purchase, to those offered by a coordination option;
- compare the quality of service that you currently provide or that you wish provided, to that offered by a coordination option;
- fully understand the impact on your cost patterns and on your agency of participation in a coordination option;
- determine what additional costs you can or will incur by participating in a coordination option and subtract those costs from the savings offered or revenues obtained.

This Manual is designed to help your agency address these issues for a number of coordination options. Although the actual answers will be determined by local and agency characteristics, as well as the characteristics of the coordination option in question, the concerns and considerations are the same.

THE MESSAGES OF THIS MANUAL

Like every Manual in the series, this Manual has several overall messages. They are:

- there may be trade-offs between and among cost and service considerations in various coordination options;
- agencies must identify all the functions which they will retain, and any new functions or costs that will be incurred by participating in a coordinated program, and add those costs to those offered by the coordinated program;
- coordination, whatever model of delivery is adopted, is a difficult and administratively complex process; agency involve-

ment cannot be considered without serious study of these factors.

COST AND SERVICE TRADE-OFFS

Many coordination options cannot provide exactly the same kind of transportation service now being provided to your clients. The service may only be different or it may be inferior to that now being provided. However, the cost savings may be considerable.

Few systems can provide perfect service or even exactly the same kind of service you currently provide. Yet many coordination options can provide meaningful cost savings. In order to competently evaluate the feasibility of your participation in such a coordination option, your agency must specify exactly what minimum level of service to clients it is willing and able to accept. You don't have to accept poor service but if you can't provide everything you want, your agency must specify exactly what it can accept.

The mere fact that a coordination option does not offer the same level of service you currently provide, or that you ideally would like provided, shouldn't automatically disqualify that option. If the cost or resource savings are significant, you should seriously consider such options if they provide above the minimum level of service you must deliver to your clients.

NEW AND RETAINED COSTS

Participation in many coordination models can create new or different cost patterns for participating agencies. If you purchase service from another provider, you may have to assign personnel to monitor the contract or to evaluate the services actually being provided to your clients. If you sell transportation services to another agency, you may incur additional maintenance or insurance costs or you may have to assign personnel to handle the billing aspects of the contract.

Even if new costs are not incurred, agencies may continue to experience some of their "old" costs if they participate in a coordinated effort. If you purchase service from a coordinated program, you may still wish to screen your own clients or to make their trip reservations. If you continue to perform these functions, you will continue to incur expenses over and above the new contract costs. Even if the agency personnel doing the client screening don't charge their salaries to the transportation budget, you must still recognize that your agency has committed additional resources to transportation provision.

In each of the cases discussed above, the costs and expenses associated with the new activities performed or the current functions retained must be

added to the contract costs to calculate the full cost of the coordinated option. Or these costs must be subtracted from any revenues generated by participating in a coordinated mechanism before comparing these alternatives to your current arrangements.

COORDINATION CAN BE A COMPLEX PROCESS

Participation in a coordination option can be extremely simple; for example, you buy transportation services from the local taxi operator for some or all of your clients. On the other hand, participation in a coordinated program can be complicated and difficult. For example, selling your excess vehicle capacity to another agency may bring you under the authority of the State Public Utilities Commission, may increase your insurance rates, and could decrease the quality of service you are providing your own clients.

Many of the difficulties that arise from involvement in coordination options are far outweighed by the benefits if these problems are handled in an intelligent way. Before beginning participation in any coordination option, your agency must consider all relevant State and local regulations. You must understand your own system well enough to predict the impact on your current operations of certain kinds of coordination participation. You must have discussed your new operational patterns with your insurance carrier.

No one can specify in advance exactly which factors will pose special difficulties for your agency. However, we can say that you must consider how participation in any coordination mechanism will affect your accounting and record-keeping procedures, your driver training needs and employee policies, your insurance rates, your non-profit status under relevant State and Federal laws, and the requirements imposed by your funding agencies.

PARTICIPATION IN A COORDINATED SYSTEM

There are many kinds of coordinated systems and many ways in which an agency can participate. For example, an agency could buy all its services from a local social service transportation system or from the local taxi operator. Or an agency could sell its extra vehicle capacity during the middle of the day to another agency or to a coordinated system. Each type of participation would have different cost and operational implications.

Chapter Two will focus on the cost patterns and concerns that arise when an agency buys service from another provider. Chapter Three will discuss the operational and financial patterns that emerge when an agency sells service to others.

In some coordinated systems, an agency can both buy and sell services. A consolidated system or a joint-service model might offer both potentials to any

agency. In most cases the agency concerned would have to consider first the cost implications of selling service and then the cost implications of buying service. Therefore the sequential guidance given in Chapters Two and Three would be perfectly appropriate.

Involvement in a coordinated system need not involve the direct provision of transportation services. An agency could buy preventive maintenance service from another agency or jointly purchase vehicles or insurance with other providers. The general concerns raised in Chapters Two and Three are equally appropriate for non-service types of coordination.

However, non-service coordination tends to be organizationally and financially simpler than service related cooperation. Therefore, while some of the material presented in this Manual is applicable to non-service coordination options, we only discuss those options that deal more directly with transportation service delivery to agency clients. The fourth Manual in this series deals with contracting for non-service coordination. Ref 1

THE ORGANIZATION OF THIS MANUAL

To simplify the following discussions, cost considerations will be separated from quality of service considerations. They are, of course, not unrelated issues. For example, if you wish to buy a very high quality demand-responsive service, it will be far more expensive than pre-scheduled group trips requiring advance notice.

Chapters Two and Three will focus on cost considerations. Chapter Two describes the basic cost figures used in both buying and selling service. Chapter Two also discusses how to evaluate the costs or prices offered to you by a coordinated option. It will show you how to compare your current cost patterns to the prices offered by a coordinated system and it will help you calculate the additional or continued costs you will incur if you do participate.

Chapter Three will help you compute the charges you should use when selling services to others or a coordinated system. The Chapter will help you recognize additional costs that you may incur if you do sell services and will assist you in incorporating those costs into your fares or price structure.

Chapter Four will discuss quality of service considerations that arise when you either buy or sell transportation services. It will suggest the trade-offs between cost and quality that some coordination options offer.

Chapter Five addresses a number of administrative, legal, operational and practical issues that may arise from your participation in coordination options. The Chapter contains a detailed "questionnaire" which is designed to give you an idea of the various factors which can be important in a coordinated program. The Chapter also gives you a way to gauge your potential for participating in coordinated efforts.

OTHER COORDINATION ASPECTS

In order to competently consider your potential for coordination you must understand both your own cost patterns and the activities which you currently undertake in transportation provision. These issues are discussed at length in the first Manual in this series, Cost Analysis for Social Service Agency Transportation Providers, Ref. 2. Some of the key points from this Manual are repeated in Chapter Two but the serious reader should seek out the first Manual for a comprehensive discussion of these important issues.

Many coordination options involve some form of written or oral contract between or among participants. The fourth Manual in this series, Contractual Arrangements for Coordinated Transportation Services, Ref. 1, discusses the technical and organizational details of various specific contract options.

In order to assess the quality of transportation you currently provide to your clients, and in order to determine your system's actual productivity in order to sell your excess capacity, your agency requires comprehensive operating data. In this Manual we will describe those data but we cannot tell you how to develop the records necessary to collect them. The fifth and last Manual in this series, How to Make your Transportation System More Efficient and Effective, Ref. 5, describes the kind of records you can and should keep to gather important operating information.

Chapter Two

How To Evaluate the Costs Offered By a Coordinated System

THE PURPOSE OF THIS CHAPTER

This Chapter is designed to facilitate the purchase of transportation or transportation-related services from coordinated programs and to allow agencies to compare current methods of service provision against those offered by other community providers. However, this Chapter has value to a number of different agencies, including those who do not now have any desire to purchase transportation.

Agencies with sizeable vehicle fleets might want to consider what will happen to their cost patterns if their vehicles must be replaced. They can use the methods in this Chapter to compare their current expenses, with vehicle replacement costs added, against prices offered by other community alternatives.

Such systems might also want to consider if they should contract for some, even if not for all, of their transportation services. It may be more efficient or even cheaper for an agency to purchase service for just a few clients. If most agency clients are ambulatory, for example, but some are in wheelchairs, an agency may significantly decrease its productivity or lower the quality of service delivered by using the same system to serve these very different types of clients.

If most agency clients live close together, but a few live at a great distance, an agency may be incurring significant expense and limiting its ability to serve other clients by directly providing service to those living far away. In both cases it may be more efficient to purchase service for the unusual clients from another, more appropriate provider.

This Chapter may also be useful to those agencies not now providing service but considering doing so in their own agency vehicles. Before buying vehicles and beginning direct service provision, an agency should consider whether other, more cost-effective options already exist in the community.

HOW TO USE THIS CHAPTER

In order to compare your present or planned service arrangement to those offered by other providers in your community, you must have a fairly good idea of your current or projected cost patterns. If you are currently providing transportation services directly to your own clients, you must know what staff and agency resources are being committed to the provision of transportation and what those commitments cost you. In order to make a meaningful evaluation you must know not only what the other provider will charge you, but also the activities that your agency will continue to perform should you choose an alternative transportation arrangement.

If you are not now providing transportation service directly, but are considering operating your own system, you should follow the same general pattern. You must estimate the full costs of operating your own system to compare against the costs offered by other community providers. (Here again the first Manual, Ref. 2, in this series will give you comprehensive guidance.) To make the language of this Chapter simpler, we will continue the discussion as if all readers already had some sort of system in place.

To compare your present method of service delivery to other community options, you must, at the minimum, for a given time period (e.g. a month or a year) know the following details:

- the number of clients carried as well as the number of one-way passenger trips;
- all the activities and functions undertaken by your agency in support of transportation service, whether or not they are charged to your budget;
- all the costs and expenses incurred in transportation provision whether or not they are charged to your budget; and
- any cost or service parameters likely to change either because of participation in a coordinated program or because of external variables (inflation, gas price increases, etc.)

You will need to know all these details whether you are buying from or selling service to a coordinated system.

Worksheet One is a composite of several tables in the first Manual in this series. Worksheet Two is a simpler form, designed to summarize the important information appearing in Worksheet One. You should not proceed further in this Manual until and unless you can fill in Worksheet Two. The following discussions will help you use both Worksheets.

UNDERSTANDING THE DIFFERENCE BETWEEN COSTS AND EXPENSES

Your agency may have a number of resources committed to transportation provision which are not charged to the transportation budget and may not represent any expense to your agency at all. You may have volunteer escorts, you may have obtained your vehicles partially or totally through grants, or your national parent agency may donate your vehicle insurance. But even though these items don't represent an expense to you now they do represent a commitment of resources that come from somewhere. Moreover, things that are free to you today, like your vehicles, may not be free in the future.

The first Manual in this series describes how to identify all the resources which are committed to your transportation service provision. Once you have done so, you should divide these resource commitments into those that do appear in your budget and those that do not (at least as yet). Worksheet One is designed for this purpose.

Expenses or out-of-pocket expenses are those items that do appear in your budget and require a financial outlay by your agency. Reconstructed costs are dollar amounts given to resources used by your system but which do not currently require any financial outlay. Full costs are expenses added to reconstructed costs.

In order to compare coordination options which offer to sell you services, you will generally use Col. 1 on Worksheet Three, Out-of-Pocket Expenses. However, to sell services to other agencies, as described in Chapter Three, you will generally use Col. 3, Full Costs.

You will use Col. 2 on Worksheet One, Reconstructed Costs, to consider the impact of changing conditions on the attractiveness of coordination options offering to sell you service. For example, perhaps you currently own vehicles given to you for free, but those vehicles will soon need replacement and no grant source is available. You might want to use the reconstructed costs of the vehicles to add to your expense total to compare to the costs offered by the coordinated system.

Worksheet One

Initial Summary of Cost and Service Parameters

Time Period _____

Number of vehicles _____

Number of lift-equipped vehicles _____

Number of one-way passenger trips _____

Number of vehicle miles _____

Number of vehicle hours _____

Functions, Activities or Purchases	Col. 1 Out-of-pocket Expenses	Col. 2 Reconstructed Costs	Col. 3 Full Costs
I. Overhead and Administration			
a. Start-up activities			
b. Client screening and eligibility			
c. Reservations			
d. Issuing documents			
e. Accounting			
f. Analysis of operating data			
g. Monitoring and evaluation			
h. Non-attributable costs & expenses			
II. Operations			
a. Scheduling and routing			
b. Dispatching			
c. Driving			

Functions, Activities or Purchases	Col. 1 Out-of-pocket Expenses	Col. 2 Reconstructed Costs	Col. 3 Full Costs
d. Escort Services			
e. Training			
f. Non-attributable			
III. Maintenance			
a. Preventive			
b. Motor repair			
c. Vehicle and accessory repair			
d. Non-attributable			
IV. Equipment and Depreciation			
a. Vehicle purchase and depreciation			
b. Modification purchase and depreciation			
c. Radio purchase and depreciation			
V. Fuel and Oil			
a. Fuel			
b. Oil			

Functions, Activities or Purchases	Col. 1 Out-of-Pocket Expenses	Col. 2 Reconstructed Costs	Col. 3 Full Costs
VI. Insurance and Licenses a. Insurance b. Licenses c. Fees			
TOTAL			

Source: This Worksheet is a simplified version of Worksheets Four and Five and Fig. 4 from the First Manual in this series,

Worksheet Two

How To Calculate Your Costs

Function	Out-of-Pocket Expenses	Reconstructed Costs	Full Costs
I. Overhead and Administration			
II. Operations			
III. Maintenance			
IV. Equipment and Depreciation			
V. Fuel and Oil			
VI. Insurance and Licenses			
TOTAL			

UNDERSTANDING THE ACTIVITIES INVOLVED IN TRANSPORTATION PROVISION

It is equally important that you understand all the activities and functions performed by your agency in support of your transportation system. Worksheet One summarizes the major activities that generally fall into each of the major cost categories. Some of these functions may be very important in your system, others may have no place. You may perform still others not listed here. But in all cases, you must have a good idea of the time, staff support, and agency resources committed to transportation provision.

This requirement has a number of purposes. First, since many agency activities in support of the transportation system do appear in your budget (as salaries, or rent, or telephone charges, etc.) you must understand which of these activities will continue to be charged to your budget under various purchase-coordination options.

If you buy all your transportation services, for example, you won't have driver salaries and benefits appearing in your budget anymore. But you may still have to pay for accountants and staff people monitoring the quality of service delivered to your clients. These expenses must be added to the costs offered by the transportation provider to calculate the full cost of that option.

Sometimes agency resources committed to your transportation system do not appear in your budget. Perhaps your agency "donates" the time of an accountant or a social worker to screen client eligibility. You still must recognize which of these agency commitments will have to continue if you choose to participate in various coordination options. Moreover, we warn you that things which are today "free" to you may well become real expenses to be charged to your budget tomorrow.

It is even more important to know all of the activities committed to your transportation system if you intend to sell transportation services. Your agency may be willing to donate a social worker's time to deal with your own clients, but will they be as willing to donate time to other clients and riders?

UNDERSTANDING YOUR CURRENT OPERATIONS

In order to make effective use of the cost and activity date developed above, you must have a firm idea of the quantity of service which is delivered by your system for those resource commitments. The single most important piece of information you must know is the number of one-way passenger trips served in the time period in question. In addition, if possible, you should know the number of vehicle miles and vehicle hours incurred by your fleet.

If you do not know the number of one-way passenger trips you now serve, or will require, you should proceed no further. Since many alternative providers deal in unit charges for one-way passenger trips, you cannot make an intelligent assessment of your options without knowing this fact. The fifth and last manual in this series tells you how to develop the kind of records that will let you calculate this important information. (Ref. 5)

If you do not know your current vehicle mile and vehicle hour figures, preferably by the different types of vehicles which you use and by the different types of clients which you transport, you should not consider selling service to anyone.

Knowing this type of operational information will allow you to calculate unit cost figures. Unit figures simply relate the total cost of the services provided to each of these three major measures (i.e., trips, miles and hours) of the quantity of service delivered. Since most alternative providers will deal in unit cost figures for these three measures, you will want to know at least your own costs per one-way passenger trip for comparison. In order to sell transportation services, you will need to know your system costs for the other two measures as well. These calculations are discussed at length in the first Manual and will be briefly repeated in this Chapter.

CALCULATING RELEVANT UNIT COST FIGURES

In order to buy or sell services to other providers, you must understand the unit cost figures traditionally used in such transactions. Unit cost figures generally relate total system costs for some time period to certain distinct, individual parameters of service. The three most common unit cost measures used in setting transportation prices are:

- cost per one-way passenger trip,
- cost per vehicle mile,
- cost per vehicle hour.

Other unit cost measures are occasionally used in price setting including cost per passenger mile and cost per passenger hour. However, these cost figures are more commonly used to evaluate the efficiency of a system and not to set fares or prices.

The simplest way to calculate needed measures is to take the total costs (from the last row of Col. 3 on Worksheet Two) or total expenses (Col. 1, last row) and divide by the total number of one-way passenger trips, or vehicle miles or vehicle hours. These calculations will be discussed below. Here we will make a few cautionary points.

SOME PROBLEMS TO WATCH FOR

Aggregate averages should be used with caution. If you currently provide transportation services to very different clients, or for very different types of trips, the average unit cost measures developed in this manner will not really reflect the cost of each individual service but merely an average. This average unit cost can be misleading.

For example, it is generally more expensive to serve people in wheelchairs than those who can walk. If you served both, your average cost per one-way passenger trip would probably significantly overstate the cost of transporting your ambulatory clients and understate the cost of transporting your handicapped clients.

If some of your clients travelled very short distances but some travelled very far, your average cost figures would overstate the costs of transporting the clients with the short-trips and understate the cost of transporting the remainder of your clients. In either of the examples given above, your average figures might be misleading if used to predict future costs.

It is also wise to remember that your current total costs are usually for a period of time already past. Costs may well increase in the future due to general inflationary trends, or the need for new vehicles or increased maintenance of aging vehicles. Since most alternative providers are offering you a unit price for the future, it is sensible to add any known or projected cost increases to your current total costs before calculating your unit costs. In fact, you may wish to do a number of sample calculations, assuming different likely cost increases.

In the sections that follow we will show you how to calculate basic unit cost figures. Then we will show you the problems of using average cost figures to purchase service for just some clients and suggest ways to avoid these problems. The Chapter will consider how you could calculate your unit costs to use in comparisons assuming different future cost scenarios. In all cases, we must assume that you already have, or know how to get, the basic operational information required.

COMPUTING BASIC COST AND EXPENSE UNIT FIGURES

One-Way Passenger Costs and Expenses

This unit measure relates the total cost or expenses associated with transportation service provision to the single most important measure of the quantity of service delivered in a given time period.

Expense per one-way passenger trip = $\frac{\text{total system expenses (Col. 1)}}{\text{total number of one-way passenger trips}}$

Cost per one-way passenger trip = $\frac{\text{total system costs (Col. 3}}{\text{total number of one-way passenger trips}}$

Note: The number of people carried is not equivalent to the number of one-way passenger trips.

Example: *One-way passenger trip, I*

Mrs. Jones is taken to her doctor's appointment. Once she is finished, she is taken home. This is two one-way passenger trips.

Example: *One-way passenger trip, II*

Four people are taken to a group picnic. That equals four one-way trips. Three of the people are picked up at the picnic by friends and relatives and only one person is returned home by the transportation system. That is one additional one-way passenger trip. The total number of one-way passenger trips for this picnic is five.

Vehicle Hour Costs and Expenses

This unit measure compares the number of hours the total vehicle fleet is in service, to the total costs of providing service for some time period. Briefly,

Expense per vehicle hour = $\frac{\text{total system expenses (Col.1)}}{\text{total system vehicle hours}}$

$$\frac{\text{total system cost}}{\text{total vehicle hours}} = \text{cost per vehicle hour}$$

Example: *Computing vehicle hour expenses*

You own one van which operates 10 hours each day, five days per week. Your total annual system expenses are $31,000 (that is, those costs which actually appear in your budget)

Your total annual vehicle hours are 2,600 (10 x 5 x 52).

Therefore, your expense per vehicle hour is

$$\frac{\$31,000 \text{ per year}}{2,600 \text{ vehicle hours per year}} = \$11.92$$

Some traditional transportation providers and some coordinated systems may wish to sell you transportation services using a price per vehicle hour of service. Generally this will allow you to purchase the use of a dedicated vehicle, that is one committed solely to your clients. Note, however, that this unit figure alone does not tell you if anybody is riding, when or how often; it is just a measure of the number of hours the vehicle fleet is on the road.

Vehicle Mile Costs and Expenses

This unit measure relates the cost of expenses of the system to the total miles travelled by system vehicles in a given time period. Briefly,

$$\text{expense per vehicle mile} = \frac{\text{total system expenses (Col. 1)}}{\text{total system vehicle miles}}$$

$$\text{cost per vehicle mile} = \frac{\text{total system costs (Col. 3)}}{\text{total system vehicle miles}}$$

It is not likely that you will be quoted this figure alone by a community provider hoping to sell you service. It is most often used in conjunction with vehicle hour charges. However, this unit measure may be used for large group trips, such as a recreation trip for a group of seniors living at or leaving from a single destination.

Example: *Computing vehicle mile expenses*

Each month you sponsor a field day for seniors in your community. If you rented a van, got a volunteer driver, paid insurance and bought gas, your total annual expenses for the twelve trips per year would be $1,380.

Your average trip is 100 miles roundtrip. Your cost per vehicle mile is

$$\frac{\$1,380 \text{ per year}}{1,200 \text{ vehicle miles per year}} = \$1.15 \text{ per vehicle mile}$$

EXPENSE OR COST UNIT FIGURES?

In general you will only want to compare your current or projected out-of-pocket expenses to the prices offered by another community provider (with your additional expenses for retained functions added in). In this case, your expense unit figures are equivalent to the prices quoted to you by other providers.

As suggested earlier in the Chapter, you will often use your cost unit figures in calculating prices to charge to other systems when selling service.

There are times, however, when you might want to add-in the reconstructed costs (Col. 2 of Worksheet One) of certain resources not currently appearing in your budget to compute your unit cost figures. If you expect or suspect that there will be changes in certain cost categories, this would be a worthwhile idea. It will be discussed in the next section.

ASSESSING THE IMPACT OF CHANGING COST PARAMETERS

If you directly provide your own transportation services, you may receive many services and the use of certain facilities for free; for example, volunteer drivers and free parking for your vehicles. However, agencies should at least know the value of services they receive at no cost. Moreover, agencies should know their cost patterns well enough to know which free services may disappear or cease to be free in the future and which costs will be subject to increases.

ESTIMATING THE IMPACT OF PRICE INCREASES

Example: *Recognizing potential in changing system expenses*

You currently directly provide transportation services to agency clients. You charge your salary and that of the drivers to the transportation budget. You also charge the cost of operating the vehicles to the budget.

You don't compute the cost of volunteer escorts, the salary of the agency accountant who helps you with your books, or the cost of buying vans. The total system expense you compute is $10,000 per year.

However, your managing director says things have been looking bad. He has had to charge the transportation budget for the 10 hours per week of the agency accountant. That is approximately $55 in salary and $15 in benefits per week. If that comes to pass, your total annual cost will be $13,640.

The director also tells you that it may be necessary to pay a special insurance premium to indemnify the escorts that you use in your system because volunteers are not covered by your regular insurance policy. That special coverage will cost $1,100 per year. If that also comes to pass, your total annual system cost will be $14,740.

Obviously, no one expects the worst, but you can be prepared by computing your current cost figures in several ways to take into account possible changes in the resources available to you and your agency. You would use the reconstructed cost figures in Col. 2 to assist you in doing so.

Example: *Calculating one-way passenger trip expenses with varying cost assumptions*

Your agency described above currently provides 1,200 one-way passenger trips per year. If your total annual system expenses are $10,000, expenses per one-way passenger trip are

$$\frac{\$10{,}000 \text{ per year}}{1{,}200 \text{ one-way trips per year}} = \$8.33 \text{ (Assumption 1)}$$

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But, if you have to pay your accountant, your total annual system expenses are $13,640 and your expense per one-way passenger trip is

$$\frac{\$13,640 \text{ per year}}{1,200 \text{ one-way trips per year}} = \$11.37 \text{ (Assumption 2)}$$

And, if you have to pay the accountant and buy the special insurance for your volunteers, your total annual system expenses are $14,740 and your expense per one-way passenger trip is

$$\frac{\$14,740 \text{ per year}}{1,200 \text{ one-way trips per year}} = \$12.28 \text{ (Assumption 3)}$$

Why are these different cost figures important? Just imagine that a coordinated project in your community asks you to use your vehicles in your off-hours to provide transportation services to other clients. And let's say that they offer to pay you $9.00 per one-way passenger trip. If the trips purchased were roughly the same as yours (in terms of mileage, etc.), you would make a profit at your current cost pattern (Assumption 2) but lose money under the second and third assumptions.

You can also use this method to calculate changes in your total cost patterns brought about by general inflation and/or the rapid increases in the price of gasoline.

Example: *Calculating system costs to reflect inflation*

Your agency currently provides 1,200 one-way passenger trips for $10,000 per year, or $8.33 per one-way passenger trip.

Of that figure, gas represents $754. Given current price increases, that figure will go to $1,104 by next year. Your labor costs are about 40% of the total, or $4,100. All wages are going up 5% so that your labor costs next year will be $4,387. Lastly, your insurance premiums are going up 8% or about $240.

Actually, you would add up all your new totals - not just the differences between this year's figures and next year's. For simplicity, we'll only add the differences. Total annual system expenses for next year will be

This year's expenses	$10,000
Additional insurance	240

Gas price increase ($1,104 - $754)	350
Additional salaries ($,387 - $4,100)	287
	$10,877

To calculate unit costs for this example

$\frac{\$10,877 \text{ per year next year}}{1,200 \text{ one-way passenger trips}}$ = $9.06 one-way passenger trip

(Remember that the uninflated unit price for this basic example was $8.33 per one-way passenger trip.)

ESTIMATING THE IMPACT OF POSSIBLE VEHICLE PURCHASES

There is another very important cost parameter which may change and affect your overall system costs even more significantly - the price of new vehicles. If your vehicles are currently close to replacement and you are thinking about buying new vehicles, you should calculate replacement expenses as well. In fact, most experts feel that you should do a number of different calculations and cost comparisons if you are thinking about buying vehicles to provide transportation services.

Example: *Computing annual system expenses with new vehicle purchases under favorable conditions*

You currently provide 1,200 one-way passenger trips per year with your existing vehicles and your total annual system expenses are $10,000. Thus your current one-way passenger expense is $8.33 (Assumption 1). Your vehicles are almost non-functional and you must buy two new ones to continue providing the same number and types of client trips.

You are eligible for a grant which will pay 80% of the cost of the two new vehicles. Your total acquisition costs will be 20% of the $36,000 total purchase price for the vans (2 vans at $18,000 a piece) or $7,200. If you assume that the vehicles will last 3 years and allocate one-third of the purchase cost to each of the next three years, you will show $2,400 as an annual expense.

Your insurance will increase $600 per year per vehicle or an additional $1,200 but your maintenance expenses will decrease about $500 per year.

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Your total annual system expenses once you buy the vehicles are

operating costs	$10,000
vehicle acquisition	2,400
increased insurance	1,200
(minus lower maintenance)	(500)
	$13,100 total annual system expenses

To calculate unit costs for this example

$$\frac{\$13,100 \text{ per year}}{1,200 \text{ one-way trips per year}} = \$10.92 \text{ per one-way passenger trip (Assumption 2)}$$

Let us also look at a more depressing example - one where your agency has to purchase the needed vehicles entirely out of its own funds.

Example: *Computing annual system costs with new vehicle purchases under less favorable conditions*

You currently provide 1,200 one-way passenger trips per year with your existing vehicles and your total annual system expenses are $10,000 ($8.33/one-way passenger trip). You must buy two new vehicles to continue the same level of transportation services. You are not eligible for any grants or loans. Your agency borrows 80% of the money to buy the needed vehicles ($28,800).

You buy two vans at $18,000 apiece for a total of $36,000.

Assuming that the vehicles will each last three years, you will allocate one-third of the total purchase price to each year's annual budget. The interest payment at 12% is $3,456 per year.

Your insurance rates increase by 6% per vehicle while your maintenance costs decrease by $500.

Your total system costs once you buy the vehicles are

operating costs	$10,000
vehicle acquisition costs	12,000
interest on vehicle loan	3,456
increased insurance	1,200

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(minus lower maintenance) (500)

$26,156 total annual system expenses

To figure unit costs for this example

$$\frac{\$26,156 \text{ per year}}{1,200 \text{ one-way passenger trips per year}} = \$21.79 \text{ (Assumption 3)}$$

If you have to purchase a vehicle, the options available probably lie somewhere in between the two examples given above. But you should notice the great difference in expense per one-way passenger trip generated by the need to buy vehicles: Assumption 1, buying no vehicles = $8.33; Assumption 2, buying vehicles at 20% of the full price = $10.92; and Assumption 3, buying vehicles at full cost = $21.79 per one-way passenger trip. Note that none of these three comparative calculations allows for inflation or changes in the cost of gas!

UNDERSTANDING THE INDIVIDUAL COMPONENTS OF YOUR AVERAGE COST FIGURES

Earlier in the Chapter we mentioned that average unit cost or expense figures could be misleading. If you provide transportation services to very different types of clients, or for very different types of trips, your average cost figures may be numbers that don't really describe any of the trips you make.

Example: *The problem of average figures*

You operate a system which has four vehicles; three of them are standard vans. The fourth is a small bus with a wheelchair lift, which you use to carry your few non-ambulatory clients.

Your total system operating and cost data are given below:

Total annual expenses = $24,900

Total annual vehicle miles = 17,413 vehicle miles

Total annual vehicle hours = 1915 vehicle hours

Total annual one-way passenger trips = 5659 one-way passenger trips

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Relevant annual unit expenses would be:

$\frac{\$24,900}{17,413 \text{ vehicle miles}}$ = \$1.43 per vehicle mile

$\frac{\$24,900}{1915 \text{ vehicle hours}}$ = \$13.00 per vehicle hour

$\frac{\$24,900}{5659 \text{ one-way passenger trips}}$ = \$4.40 per one-way passenger trip

If a coordinated system offered to carry your handicapped clients for \$7.00 per trip, you might initially refuse.

However, what if upon closer examination you found that the one lift-equipped van was really creating a disproportionate share of the total system expense? For example, let's say the lift-equipped vehicle had the following characteristics

- \$1.80 per vehicle mile
- \$16.60 per vehicle hour, and most significant, because of these costs and the characteristics of the clients themselves, the
- expense per one-way passenger trip for handicapped clients was \$8.90

Now the \$7.00 per trip looks more inviting.

Please note that the actual calculation of the costs of the lift-equipped bus alone are more difficult than we've made them seem here. You cannot calculate those kinds of figures from only the few cost data we've already discussed. This Chapter is just making two very important points

- if you carry very different types of travellers, you should try to calculate the actual costs of carrying each type rather than relying on system averages, and
- system average cost and expense figures can be misleading.

If your agency is carrying different types of clients or providing very different types of trips, it would be wise to consult the fifth and last Manual in this series to learn how to calculate the actual costs of transporting each type of client or trip (Ref. 5). Only in this way can you intelligently assess the costs offered by other providers.

Worksheet Three

Comparisons When Purchasing Service

Your System or Service	Alternative Systems Costs
Current Cost Per One-Way Passenger Trip $__.__(1)	$__.__(1)
Number of One-Way Passenger Trips _____(2)	_____(2)
Total Annual Cost $_____(3)	$_____(3)
including	plus expense of any retained functions
- overhead and administration(4a)	$_____(4a)
- vehicles and depreciation(4b)	$_____(4b)
- operations(4c)	$_____(4c)
- fuel and oil(4d)	$_____(4d)
- maintenance(4e)	$_____(4e)
- insurance(4f)	$_____(4f)
	Total of Retained Functions $_____(5)
	Total Annual Cost (add line 3 and 5) ➡ $_____(6)
	To compute cost of one-way passenger trips divide line 6 by line 2 ➡ $__.__(7)

Compare line with line

$_____ 3 against 6 $_____ or

$_____ 1 against 7 $_____

Additionally, if you are buying service from a provider who bases his fares on average unit cost figures, you must be sure that your clients are indeed like the system averages quoted. If you are selling service to an agency, you must make sure that the clients to whom you will be providing service display the same cost characteristics as your average client, if your charges are based on average cost figures. (This topic will be discussed in greater depth in Chapter 3.)

HOW TO COMPARE YOUR COSTS TO THOSE OFFERED BY OTHER PROVIDERS

Most alternative providers will offer to sell you services based on one of the three unit cost measures discussed above. Therefore, in order to compare your current cost patterns to those offered by other providers, you must express your current and anticipated expenses in comparable terms. Often you will be able to directly use the unit figure quoted by a community provider, although just as often you may not.

You must remember that only one of the three basic unit cost measures deals with the quantity of service delivered; that measure is cost or expense per one-way passenger trip. If a coordinated system offered you a rate per one-way passenger trip, and you knew the number of clients to be carried, you could easily compare your current total costs to the total costs of the coordinated system.

If you were quoted a price per vehicle mile or vehicle hour, however, you would need to convert the unit costs quoted to either total costs for all your clients carried or costs per one-way passenger trips. In general, it would not help you to compute your own costs per vehicle mile or per vehicle hour to compare to those unit costs offered by another provider. Doing so would not tell you how many of your clients would be carried by the alternative provider for those unit charges.

You should also note that none of the three basic unit cost measures tells you anything about the quality of service delivered to your clients. Therefore, you could only directly compare an alternative provider's one-way passenger charge to your current cost patterns if the kind and quality of service offered were roughly comparable to that you now provide.

In the sections that follow we will show you how to compare your costs to the unit costs offered by alternative providers in a number of different circumstances. We will begin by showing the easiest calculation, one where the unit cost is given for a one-way passenger trip, and the quality of the service offered is roughly equivalent to that you currently provide.

In all circumstances, the general procedure is the same. To compare your current cost patterns to those of a coordinated system or alternative provider, you must;

- calculate your total expenses (or costs) for the time period in question;
- add to those expenses any known or expected cost increases;
- calculate a one-way passenger cost for the service offered by an alternative provider for the same level of service;
- add to the contract cost any cost or expense which you will incur or those that you will retain if you choose that alternative;
- compare your current one-way passenger trip expenses or total expenses to the unit figure or total cost offered by the alternative provider.

COMPARING COSTS PER ONE-WAY PASSENGER TRIP

Worksheet Three is designed to help you easily compare your cost to those offered by other service providers. If a coordinated system offers you a fare per one-way passenger trip, you can either compare it directly to your estimated expense per one-way trip for the time period in question (line 2), or you can compare total costs (line 3) for the time period in question. Either procedure will give you the same answer but keeping costs expressed in one-way passenger trips is important if total expenses will go up if ridership goes up.

Many alternative providers offer costs per one-way passenger trip although this may not always be obvious. A taxi operator who will sell you service for one client based on the meter reading is offering a one-way passenger charge (if only one client is carried) even though this fare will change with mileage.

We suggest that you carry out the calculations suggested by Worksheet Two under several sets of assumptions. For example, you could compare your costs per one-way passenger trip to those of other providers, first assuming no new vehicle purchases and then adding the costs of buying new vehicles.

Using Worksheet Three you can compare your current costs per one-way trip for all necessary items against the proposed unit fare plus the cost of all retained activities.

Example: *The impact of the expense of retained activities*

You own one very old van and directly provide services to your clients. If you had to buy a new van, and incur the related costs, your cost per one-way passenger trip would be $11.80. A coordinated system is offering to carry your clients for $10.40 per one-way passenger trip.

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However, you realize that you will still have to prepare financial and accounting documents for your funding source; you will still have to screen clients for eligibility; and, you will still have to make client appointments for transportation. To do so will take one-half time for a professional staff person, $7,000 including benefits.

You currently provide 1,600 one-way passenger trips per year at $11.80 for a total of $18,800, including those functions discussed above.

If the 1,600 trips were purchased from the coordinated system for $10.40 apiece, you would have to add salary and other costs at roughly $7,000. This would bring your total costs under the new system to

trip costs: 1,600 trips @ $10.40	$16,640
retained salary costs	7,000
	$23,640

You wouldn't have to re-calculate your full one-way passenger trip costs to know that this alternative wasn't as attractive as it originally seemed.

You could re-calculate one-way passenger trip costs, of course:

$$\frac{\$23,640 \text{ per year}}{1,600 \text{ one-way trips per year}} = \$14.78$$

You should remember that you may also give up some onerous chores that you currently don't show as part of your budget. These activities may represent real costs to you nonetheless. For example, many social service agencies spend a great deal of time checking on their clients' whereabouts if they are late, responding to complaints, and keeping vehicle maintenance records. These chores may have been part of the duties of a staff person who was not charging any additional time to the transportation budget. But if the coordinated program offers to relieve your agency of these duties, you may achieve a real savings, although it won't necessarily show in your unit expense figures.

COMPARING COSTS PER VEHICLE HOUR

Vehicle hour charges are usually offered for dedicated vehicles, vehicles put aside only for the use of your clients for certain hours per day or certain days per week. Sometimes group trips (charters, for example) are offered on a vehicle hour basis. However, some alternative providers may offer you a vehicle

hour charge whether you provide group trips or many individual demand-responsive trips.

Vehicle hour figures say nothing about how many passengers are carried by the provider in each hour. Moreover, comparing your system's current vehicle hour costs to those of an alternative provider is usually a meaningless exercise; there is no reason to assume that there is a relationship between the number of people your current system carries per vehicle hour and the number of people that would be carried by the contractor.

In the majority of cases you will have to convert the vehicle hour charges offered by coordinated programs into costs per one-way passenger trip in order to compare your current option to the alternative. And in most cases it will not be necessary to calculate your own cost or expense per vehicle hour to make a meaningful comparison.

Using Unconverted Vehicle Hour Charges

You should only use vehicle hour charges directly, without converting to one-way passenger trips, if the following conditions apply:

- you are required or desire to have a transportation system in place at all times, and ridership levels are not specified;
- you have random trip needs but when your clients need to travel they must be guaranteed immediate response;
- you are purchasing group trips at pre-scheduled specified times.

Such instances are fairly rare. If they do apply, you can calculate your costs by multiplying the number of vehicle hours which you wish to buy by the charge per vehicle hour, add the costs of all the transportation related activities that your agency will continue to perform, and check that total against your current system vehicle hour charges or total expenses.

Occasionally a situation arises where an agency wishes to contract with an alternative provider to run its own existing system, vehicles and all. In this case vehicle hour charges could be used without being converted to one-way passenger trips.

Example: *Using current vehicle hour costs as a basis of comparison*

You currently contract with a CAP agency to provide transportation services to your clients, in your own vans, which you rent ➥

to the CAP for $1 per year. Your total annual system cost is $39,000. Another community agency is developing a transportation system, and bids for your transportation service. Their bid is expressed in vehicle hours of service.

That agency offers to provide identical service for your clients in your own vans for $9.20 per vehicle hour.

You go through the vehicle manifests and find that each of your two vans is run by your current contractor an average of six hours per day, six days per week. Your annual system vehicle hours are 2 (vans) x 6 days x 6 hours x 52 weeks = 3744 vehicle hours per year.

$$\frac{\$39,000 \text{ per year}}{3,744 \text{ vehicle hours per year}} = \$10.42 \text{ per vehicle hour}$$

You have the choice; you can allow the new contractor to operate the same schedule and reduce your total costs, $9.20 x 3,744 vehicle hours = $34,444

or

you can pay the new contractor the same amount of money as you were spending before - $39,000 - and obtain a total of 4,239 vehicle hours, or more than nine additional hours per week. That might allow you to run limited Sunday service.

Converting Vehicle Hour Charges to One Way Passenger Trip Costs

Vehicle hour charges tell you nothing about how many of your clients are carried. In many cases this cost figure is meaningless unless it is matched with the number of clients who will be provided transportation. In general, to use these measures you will either have to convert them to one-way passenger trip costs to compare to your present unit costs, or, you will have to convert them to total annual charges and compare total costs.

In order to convert vehicle hour charges to one-way passenger trips you will have to know the average number of passengers carried by the alternative system in the average vehicle hour. Sometimes it is difficult to get the provider to give you this information, but once you have it you can calculate one-way passenger trip costs:

$$\text{one-way passenger trip cost} = \frac{\text{vehicle hour charge}}{\text{average number of one-way passenger trips per vehicle hour}}$$

There are pitfalls in such conversions. The most serious problem is that your clients may be so different from those currently carried by the alternative provider that they will either take more or less time to be served, thus distorting these calculations. If they took longer to serve, perhaps because their trips were longer, you might be billed for more money than you expected to pay.

Example: *Problems with using average passenger data*

A coordinated system provides service for seniors travelling to congregate meal sites, for handicapped adults travelling to sheltered workshops, and demand-responsive medical trips for the welfare department.

The entire system operates 61,200 vehicle miles per year in providing 410,040 one-way passenger trips. Their average one-way passenger trip per vehicle hour measure is

$$\frac{\text{410,040 one-way passenger trips per year}}{\text{61,200 vehicle miles per year}} = 6.7 \text{ one-way passenger trips per vehicle hour}$$

They offer to sell you service at $14.80 per vehicle hour.

You are currently providing demand-responsive medical and shopping trips for needy seniors at approximately $11.00 per one-way passenger trip. But if the system carried 6.7 clients per vehicle hour, your one-way passenger trip cost would be $2.21 per passenger trip!

But it turns out that for just their demand-responsive service the system averages 1.5 one-way passenger trips per vehicle hour. This means that for the kind of service you're purchasing, your average one-way passenger trip cost would be

$$\frac{\text{\$14.80 per vehicle hour}}{\text{1.5 one-way passenger trips per hour}} = \$9.87$$

Note: one of the values of a coordinated system is that it can reduce the costs for demand-responsive trips through the cost-

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savings it achieves in providing highly efficient group trips. In other words, the averaging of costs can help lower the vehicle hour charge offered to you even for demand-responsive service.

If at all possible you would like the alternative provider to tell you the average number of clients receiving specific services who are transported in one vehicle hour. Wheelchair-bound travellers, even if travelling in groups, take significantly longer to serve than ambulatory passengers. Longer trips obviously take more time than short trips. Group trips generally take less time per passenger than individual demand responsive services.

In many cases, an alternative provider may not have such specific information available. Perhaps the system has never before provided the kind of service which you require. If the alternative provider does not know how many of your kind of one-way passenger trips can be served in a vehicle hour, you must work with them to 1) specify the kind of service that will be offered, and 2) use your trip information (type, number, location and clients) to figure out average vehicle productivity. (The fifth and last Manual in this series can give some guidance).

It is also possible to compare total annual costs based on vehicle hour charges to your current total annual costs, without converting back to one-way passenger trips if it is known how many trips are carried per vehicle hour.

Example: *Comparing total vehicle hour charges to your current total expenses*

You carry a number of retarded adults to day-care facilities five days a week. The first pick-ups start about 7:00 a.m. and all people are dropped off by 8:45 a.m. Then at the end of the day, people are picked up at the facility at 4:00 p.m. and the last person is usually home by 5:30 p.m.

Annual transportation costs are currently $49,400.

A coordinated system in your community offers you the same level of service at $13.25 per vehicle hour. They require a guarantee of four hours per day or 20 hours per week.

Your total annual cost with the coordinated service would be the total number of vehicle hours per year for EACH vehicle required, times the vehicle hour charge, plus the cost of all the transportation related functions that your agency retains.

You will have to work with the coordinated system so that they and you can determine how many vehicles will be needed to carry

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your clients. They will need to know where people live (so they can figure out a pick-up schedule), whether tie-downs or other equipment are required and if escorts are riding with the clients.

Let us say that after looking at your client trip-records they feel that three vehicles will be necessary.

To calculate your costs:

Total vehicle hours (3 vehicles x 20 hrs/week x 52 weeks)	3,120	
Total vehicle hour charges (3,120 vehicle hours x $13.25)	41,340	
Subtotal	$44,460	(a)
Plus the cost of any functions still performed by your agency	?	(b) See Col. 2 on Worksheet Three
Total annual cost by the coordinated system	?	(a + b)

If you 1) could spend your existing transportation resources for alternative services, and 2) the costs of the functions that were retained by your agency weren't $4,940 ($49,400 - $44,460), and 3) the system picked up all your clients in the time purchased, you should indeed opt for the coordinated system's services.

In most cases, you will need to know how many of your clients are carried during the vehicle hours in question. To do so, you can't simply calculate what your total annual costs would be; you'd also have to know how many one-way passenger trips are carried. In the example above the coordinated system estimated for you the number of clients to be carried in a vehicle hour. You may have to do this calculation yourself. In any case, either you or the coordinated provider must know or estimate the number of one-way trips carried per vehicle hour.

COMPARING COSTS PER VEHICLE MILES

Vehicle mile figures, like vehicle hour figures, tell you nothing about the number of passengers carried. In most cases you must relate vehicle mile charges to the number of clients carried in order to compare alternatives to your present system.

It isn't generally useful to compare your own vehicle mile charges to those offered by another provider; as with vehicle hour charges there is no reason to assume that there is a relationship between the number of people your current system carries per vehicle mile and those carried by an alternative provider.

The only occasions in which you could use vehicle mile charges, without converting them to one-way passenger trips would be if;

- you wish to purchase large group trips at prescheduled times
- you wish to hire the alternative provider to operate your own system using your own vehicles.

Only in these cases could you directly compare your current unit costs or expenses per vehicle mile to those offered by alternative providers.

Vehicle mile charges are sometimes offered along with vehicle hour charges as a dual price. In this way, a provider can protect him/herself if charges which tend to vary by mile (like gas) increase significantly. If you are offered both these measures, the calculations are more difficult but the principle is the same. Total costs for both measures must be related to the number of one-way passenger trips carried, and, the expenses associated with any functions which your agency continues to perform must be added.

To convert vehicle mile charges into either total annual costs or one-way passenger trip costs you must know:

- the average trip length of your client trips
- how many of your clients ride together
- how often your clients travel

It may be possible to obtain the provider's average number of one-way passenger trips per vehicle mile <u>but</u> this figure has even less validity than the comparable vehicle hour figure. Without knowing the specifications of your client's trips, it is very difficult to calculate how many will be carried per vehicle mile. Fortunately, this unit cost measure is very rarely offered alone and almost never for any kind of demand-responsive trip.

If you are offered this cost measure alone, or with vehicle hour charges, you must convert it into total costs or one-way passenger trips by working with the provider. You will have to tell the provider all about your clients, their trips, whether they require escorts and how often they travel. Together you will be able to work out average passenger productivity per vehicle mile.

Example: *Converting vehicle mile charges into total costs, I*

You currently provide recreation trips for handicapped youngsters. Your total annual expenses are $14,100. This figure does not include salaries, etc. for professional staff who occasionally accompany the kids, nor of volunteer escorts.

A coordinated system in your community offers to sell you the needed service at $4.00 a vehicle mile.

You need to calculate the average trip length. An analysis of your records and a knowledge of the places to which you currently travel suggest that average roundtrip length is 18 miles.

You need to calculate the number of trips you make. You find that you make an average of 5 trips per month or 60 trips per year.

Now here's a sneaky one - you have to know how many of your clients currently go on each trip and how many need wheelchair lift-equipped vehicles. You need to know this to know if the contractor will be using one, two or more vehicles to provide needed service. Remember that if the coordinated system has to use three vehicles, they will triple the total mileage charge!

You find that six kids usually go on each trip; only two need wheelchair tie-downs. It turns out that the coordinated system can accommodate your clients on one vehicle.

Therefore, the total annual vehicle miles that you accrue is (the number of trips) 60 times (average trip length) 18 miles or 1,080 vehicle miles.

It appears that at $4.00 per vehicle mile you will save a great deal of money by contracting out your trips, (if, of course, you are allowed to use your transportation funds to do so).

alternative cost ($4 x 1,080) = $4,320 (a)

plus any functions retained ? (b)(Col. 5, Worksheet Two

? (a + b)

Alternative Example: *Converting vehicle mile charges into your total costs, II*

Take the same basic details given above:

60 trips per year

18 miles average trip length

But the coordinated system finds that because of the characteristics of your clients, it must use three vans to carry your clients on each trip.

Now to calculate what it will cost you, you must multiply the number of trips (60) times the average trip length (18 miles) times the number of vehicles (3). The total vehicle miles incurred by the system is (60 x 18 x 3) = 3,240. Your total charge for these services per year will be $12,960.

Now the choice is far more difficult and depends on:

- the full cost of any transportation-related functions that you will continue to perform
- how liquid your transportation budget is (that is, how easy it is to take money currently committed to your existing transportation arrangement and use it to pay for these services).

Note that in the examples above, it is not necessary to convert any of the costs involved back into one-way passenger trips just to compare the costs. If the need arose, you could easily do so, however. Note also, however, that at least one party to the transaction needed to know the number of clients carried per vehicle mile.

Also note that in the examples above, unless the coordinated system says differently, there may be variations in the total cost. These variations may be to your advantage or not. If two more children needed wheelchair tie-downs on

any given trip, the coordinated system may need to run one additional vehicle. On the other hand, if a few less children went on any given trip, they might run one less vehicle. Also, average trip can be slightly misleading. If the trip on which the extra clients travelled was a very long one (say, 60 miles roundtrip), your total vehicle mile charge for that particular trip might be much higher than expected.

PURCHASING PART OF YOUR TRANSPORTATION NEEDS

Earlier this Chapter suggested that you might wish to purchase just some of your trips. An example earlier showed how you might be offered service for just your wheelbound clients.

In order to compare the cost offered to you for any part of your service, to your current cost, you must estimate what that particular class of service (or client type) costs you to serve. Using average unit cost figures could be misleading. Chapter Three briefly describes how you might identify which costs are associated with different types of client services. The topic is also covered at length in the last Manual in this series, Ref. 5.

SOME CLOSING COMMENTS

This Chapter has centered largely on the cost considerations involved in purchasing service from alternative providers. Chapter Three will describe how you might sell transportation services. Chapter Four will discuss the service concerns which you must also consider when purchasing service.

There is a cost consideration which we have only briefly addressed. Although an alternative provider may offer a cheaper and even better service than you now provide, you may not have the liquid or cash funds available to purchase that service. Even out-of-pocket expenses may represent items like payments on vehicle loans; you can't stop paying them in order to buy service from another provider.

You should use this Chapter to help you understand the full cost implications of running your own system when other community providers may offer more efficient options. At the time you start to make vehicle replacement decisions you should seriously consider these cost calculations.

Chapter Three

How to Compute Costs In Order To Sell Services in A Coordinated System

WHO CAN USE THIS CHAPTER

Your agency may be in a position to sell transportation services to other agencies. Perhaps your vehicles are not utilized on weekends and you wish to let other agencies charter them. Perhaps you have a significant number of hours in the day when your vehicles are not providing service to your own clients. Perhaps you have extra space aboard your vehicles even when your clients are utilizing your service.

Each of these situations creates opportunities for coordination. You can increase the efficiency of your own system while, perhaps, decreasing your costs. However, selling transportation services can be complicated. Before you begin you should make very sure that you understand 1) your current cost and operational patterns and 2) the impact on those patterns of selling transportation services.

At the minimum, you should already know, or be able to easily calculate, the following data about your system:

- Vehicle or service hours per vehicle

- Seat miles per vehicle and system-wide loaded or occupied vehicle hours
- Dead-Heading Vehicle Hours
- Dead-Vehicle Hours
- Vehicle Miles per vehicle and system wide
- Loaded or Occupied Vehicle Miles
- Dead-Heading Vehicle Miles
- Average passenger trip length, by type of client
- Number of one-way passenger trips

If you believe that you might be a good candidate to sell transportation services, but you do not know these types of performance data, you can use the last manual in this series (Ref. 5) to help you develop them. But until you know these data about your system, you should not begin selling services.

In addition, before you begin selling transportation or transportation related services, you must have a clear idea of your costs and expenses. You must understand all the resources which you have committed to the provision of transportation.

The most significant problem social service systems have when they begin selling services is seriously underestimating their costs. There are several cases in the literature where systems offered to sell transportation services at what turned out to be 30-40% less than their actual expenses! This can happen because agencies keep poor transportation records and have little time to accurately record their expenses.

You must understand not only your current cost patterns but also how various activities performed by your agency create those costs and expenses. Many agencies get certain services performed for "free," which means that although the services have a cost to somebody, they don't get charged to the agency transportation budget. But many of these activities are only "free" as long as the agency maintains its current level of activities.

Many costs which are donated or covered from other budgets cannot be covered if agency transportation activity increases. Other costs should not be donated by your agency to the agencies to whom you sell service; why should your agency donate an accountant, for example, to another system? In both cases you must understand what will happen to your cost patterns if you sell your transportation services.

WHO SHOULD SELL TRANSPORTATION SERVICES?

In general terms you can consider selling transportation services if you have long periods of the day or certain days of the week when your vehicles are not fully utilized. In technical terms you are a good candidate for selling transportation services if you have a high percentage of Dead Hours or a low percentage of Occupied Vehicle Hours. These ratios indicate that your vehicles are not sufficiently utilized.

In that case you might want to sell those unoccupied or Dead Hours to other agencies, generally using your own drivers. This is called vehicle-sharing by most authorities.

You are also a good candidate for selling transportation services if you have a low number of passengers per Seat Mile or per Vehicle Mile or per Vehicle Hour. All these productivity measures generally indicate that you are not fully using the capacity of your vehicles even when they are on the road and serving passengers. This type of coordination is often called time-sharing.

In addition, you could rent or charter your vehicles, with or without your drivers, for group trips, excursions, etc., on days when you are not using the vehicles yourself. Many agencies commonly perform such activities without realizing that they're a form of coordination.

HOW TO CHARGE FOR SERVICES

Not surprisingly you will generally use the three unit measures discussed in Chapter Two to sell services to other agencies:

- Cost per one-way passenger trip
- Cost per vehicle mile
- Cost per vehicle hour

But you probably won't want to directly use your current unit cost or expense figures for billing purposes.

In order to calculate the proper charges for these unit measures, you must consider several aspects of the service you will provide and of the impact of the service provision on your current operation.

First, you must consider which of the reconstructed costs (appearing in Col. 2 of Worksheet Two) you wish to add to your current expenses. Then you must consider if the provision of more service will either increase or decrease some or all of your costs. Lastly, you must consider the types of services which you will be providing and price different services in a ratio to their different costs to your agency. Each of these items will be discussed below.

COST VERSUS EXPENSES

In charging a fare to another agency, should you calculate only your out-of-pocket expenses or should you add in the reconstructed costs of all resources committed to service provision? The answer probably lies somewhere in-between.

First, you must add to your expense totals any reconstructed costs which will or may become real out-of-pocket expenses if you sell services. Perhaps your volunteer escorts will no longer volunteer their services; perhaps the bookkeeping load will become heavy enough to require the actual employment of a part-time bookkeeper. If so, these changes must be recognized and reflected in your price.

Second, there are many activities which are charged to other budgets in your agency and probably should be recaptured from agencies to whom you sell your services. If you feel that you do not wish to donate your agency resources (regardless of the budget in which they appear) to other agencies, you should add the reconstructed costs of those resources, from Col. 2 of Worksheet One (or more appropriately from Worksheets Four and Five in Manual One), to your expense total to use in calculating your prices.

Third, you probably should charge other agencies for vehicle and equipment depreciation whether or not you paid for the equipment in question. Although there are some Federal guidelines which may apply here, (see Ref. 3), you must recognize that vehicles wear out and they wear out faster the more often they are used. Your vehicles indeed depreciate faster when you sell service to other systems.

On the other hand, the process suggested in the first Manual asks you to give a dollar value to volunteers and donations. Is it appropriate for your agency to charge other agencies for these things? Several commentators on this Manual felt that such a procedure was not appropriate.

If you feel that you cannot charge other providers for such resources, and you are sure that those resources will continue to be donated to your agency, you need not add them to your expense total. Agencies will have to pick and choose which reconstructed costs to add to expense totals.

Once you have added all applicable reconstructed costs to your expense total, you should add any new costs or expenses generated by your participation in a coordination program. This is discussed in the section below.

RECOGNIZING CHANGES IN COST OR EXPENSE PATTERNS

A number of costs may increase, and perhaps some decrease, if you begin to sell your services to other providers or agencies. Many costs are dependent on the time and distances consumed by your vehicles: gas, driver salaries, maintenance, etc. Some cost increases can be covered by assessing your current unit charges against new trips. Others, however, must be added to your current expense or cost totals to develop new unit prices.

Any costs which will increase, or decrease, disproportionately with the addition of new trips should be added into your cost or expense totals (or subtracted if a decrease is involved). Any number of cost patterns may change and they depend on the characteristics of your system and of the client trips.

Here we can give only a brief summary of the cost patterns which may change:

- volunteers may require salary or certain jobs may not be efficiently performed by volunteers once you start to sell transportation
- maintenance and repair costs will go up more than proportionately as your vehicles are used more extensively
- insurance costs may increase if you provide additional services, or if your public status is held to have been changed, or if you carry people considered to be high risk
- part-time people may have to be hired full time to handle increased activities
- new people may have to be hired to perform new functions (e.g., record-keeping)

In addition, of course, you must add any cost increases, or decreases, which would come about "naturally", like salary and fuel costs, and other responses to general inflationary trends.

Worksheet Four is designed to help you compute the total expenses or costs associated with providing transportation to your own clients and to other agencies. The data in Worksheet Four can be used to compute average unit cost measures for setting prices. You must still consider whether you want to use average cost measures.

CALCULATING UNIT COST MEASURES

Worksheet Four

Charging For Transportation Services

YOUR SYSTEM COSTS AND UNIT COST FIGURES:

Summary Calculation of Total Annual Cost

Current Annual Cost, including $_____(1)

- overhead and administration $_____(1a)
- vehicles and depreciation $_____(1b)
- operations $_____(1c)
- fuel and oil $_____(1d)
- maintenance $_____(1e)
- insurance $_____(1f)

Possible System Increases

- fuel price differential $_____(2)
- general inflation as a percentage of #1 $_____(3)
- known projected increases (e.g. approved salary hikes) $_____(4)

Possible Costs Incurred in Joining a Coordinated System

- increased insurance $_____(5)
- increase staff-time required (salary and benefits) $_____(6)
- increased maintenance and repair charges $_____(7)
- additional driver training $_____(8)
- other: _____ $_____(9)

_____ $_____(10)

TOTAL ANNUAL SYSTEM COST (lines 1 - 10) → $_____(11)

From driver logs and manifests and other records

Annual number of vehicle miles _____ miles

Your average cost per vehicle mile $_____(12)

Annual number of vehicle hours _____ hours

Your average cost per vehicle hour $_____(13)

Annual number of one-way passenger trips _____ trips

Your average cost per one-way passenger trip $_____(14)

Worksheet Three can be used to compute average cost measures for your system once you begin to sell transportation services. But you will not want to use these measures in all cases.

Using Average Measures, Alternative I

- You can use average measures if
- the riders you would be serving are similar to your own clients in terms of personal assistance, special equipment and time required to board and de-board;
- trip lengths and trip characteristics are similar to your clients' trips
- the additional costs associated with serving new clients are not a significant percent of your total transportation costs.

- If these three conditions are met, you will probably do well by charging the average unit costs which can be calculated from Worksheet Three.

Using Marginal Costs, Alternative II

If serving other clients will significantly increase your transportation costs, there is little reason to spread those large, marginal costs over all of your current ridership or mileage or hour figures. These costs weren't generated by your clients and shouldn't be attributed, even indirectly, to your clients.

If you will face significant cost increases when selling transportation, we suggest that you use a different strategy. Take the number of hours or mileage or new riders for whom service will be purchased and divide by the total of the new expenses (Lines 5 - 10 on Worksheet Three) to generate per unit expenses for just the new riders. Then divide your current total plus inflationary or expected expenses (lines 1 - 4 on Worksheet Three) and divide by the relevant unit (i.e., mileage, one-way passenger trips). Then add your current unit costs to those generated for new travellers alone.

Example: *Unit Cost Calculations, Alternative II*

Step 1. Take number of $\frac{\text{new one-way passenger trips}}{\text{total of new expenses (lines 5 - 10)}}$

or

$\frac{\text{new vehicle miles}}{\text{total of new expenses}}$

➥

or

$$\frac{\text{new vehicle hours}}{\text{total of new expenses}} = \text{Additional cost/unit A}$$

Step 2. Take your current

$$\frac{\text{one-way passenger trips}}{\text{total current \& additional expenses (lines 1 - 4)}}$$

or

$$\frac{\text{vehicle miles}}{\text{total current \& additional expenses}}$$

or

$$\frac{\text{vehicle hours}}{\text{total current \& additional expenses}} = \text{current cost/unit B}$$

Step 3. Add A and B to get a unit cost for a price = A + B

When Not to Use Marginal Costs

Some systems are tempted to charge other agencies for only the marginal costs. Perhaps your vehicles are not in use for several hours per day and it seems only decent to let another agency use your services for those hours for just the extra gas and maintenance involved.

We recommend against this procedure for several reasons. First, you may be underestimating what the additional expenses really are. But, just as significantly, if you sell services very cheaply, you may encourage people to rely on you for cheap service. At some point, agencies buying this marginally "cheap" service must cause your full costs and thus your average costs to rise. But by that time it may be too late to realistically charge participating agencies.

If you begin to provide transportation services in a significant way, you should charge at least the average cost or you will be subsidizing other agencies! You may even end up with a maze of different prices, none of which reflects the true cost of service provision.

We recommend that you use either an average unit price, making sure that all relevant cost increases and new expenses are considered, or that you use the alternative marginal method suggested above. We strongly recommend against charging only marginal costs to any agency; your charge should always include some element of the average cost of service.

Which unit measure to use?

When you calculate average costs under Alternative I, we suggest that you divide the new expense or cost total by your current unit measure. Thus, if your costs (lines 1 - 10) are $2000 per month and your current ridership is 500 one-way passenger trips, and another agency will buy five one-way trips, we suggest that you divide the total expenses ($2000) by 500 and not 505.

In part this is because some of the expenses you incur (shown on lines 5 -10) will not go away if the buyer stops using your service. You may well have accepted those costs regardless of the other agency's behavior. In part it is because you should not quote a different rate to every agency which buys service from you.

However, if the buyer increases any of your total unit measures by more than 30%, then you can divide new total expenses by new unit measures. Using the brief example above, if new ridership were 200 one-way trips per month, you could divide the new expense total ($2000) by 700 and not 500. However, this would still leave you with the problem of charging different rates to different agencies for the same services.

We suggest that an alternative is to re-figure your average costs once or twice during a contract period to take into account the possible efficiencies and reductions brought about by the participation of additional agencies. Then you could re-negotiate every agency's contract at that time based on the average cost figures in existence at that moment.

DIFFERENT FARES FOR DIFFERENT SERVICES

Although we strongly recommend against charging different rates for the same service, we think it makes a great deal of sense to charge different fares for different services. If you do so, you can only make limited use of the averaging methods suggested above.

You should charge different rates than your average unit costs if:

- the trips to be taken are very different from yours in terms of length or characteristics
- the clients require different levels of personal assistance, vehicle conditions, or boarding time than your clients.

Note that these differences can go both ways. Contract clients can either be cheaper and easier to serve than your own clients or harder and more expensive to serve. If you serve very long trips and someone wishes to buy very short group trips, you would incur less than your average costs in serving them.

If you currently provide different kinds of trips, you should calculate your own average costs for each of those trip types, and add in additional expenses which will be incurred (as in Alternative I). Then, if an agency wishes to purchase the same or similar service, it will be appropriate to charge your average figure for that kind of trip.

For many kinds of coordination, a vehicle hour figure alone will allow you to capture many of the differences in types of service. You would take your current average vehicle hour charge, add known cost increases and add any additional expenses, and simply charge by the vehicle hour. This approach works best for time-sharing and group charters. It rarely works for demand-responsive trips and ride-sharing unless all the clients aboard a vehicle during a certain time tend to be from the same agency.

Unfortunately, many agencies interested in purchasing transportation do not understand either vehicle hour or vehicle mile charges. Often they are only concerned with the cost to them of one-way passenger trips; sometimes they do not even understand that concept. The literature is full of stories of agencies offering a set amount of money expecting to receive "all the transportation services their clients needed."

Moreover, many agencies purchasing transportation services do not like uncertainty or ambiguity. Even if they understand a vehicle hour charge, they may not understand that the same number of clients may not always be served in an average vehicle hour. It may be necessary for you to make your best estimate of the number of their clients who can be carried and offer them a fixed rate based on one-way passenger charges but calculated on vehicle hour (or mile) figures.

If you would like to directly compute a charge per one-way passenger trip and you do not currently provide the kinds of trips which an agency wishes to purchase, you have several options. The first, and most sensible in the long run, is to work with the agency to see exactly what the required trip characteristics are. If the trips to be purchased are longer than your average trip, you can add your average mileage charge to your average one-way passenger charge for just those miles above average. The same can be done with average vehicle hour figures.

Note that you do not have to directly compute costs per one-way passenger trip to charge agencies for costs per this unit. You can calculate vehicle hour charges and estimate the number of one-way passenger trips of the sort required which could be carried in one vehicle hour. You could then indirectly calculate a charge per one-way trip, a price which many social service agencies seem to favor because it seems simple to understand.

If you are going to charge different rates for one-way passenger trips which are really based on individual client and trip characteristics, it may appear that you are charging different rates for the same service. It is very important that you make clear to all agencies involved exactly what is the basis of the price charged. Some agencies, such as those funded under Title XX, are not allowed to pay a disproportionate share of a system's costs. Differences in rates may initially appear to be an example of that.

You will need to work with purchasing agencies to help them understand their own client and trip characteristics and your system operational characteristics. Perhaps the most serious problem in selling transportation services is that many buyers are unsophisticated and do not understand important transportation patterns. You should try, as far as you are able, to help them understand exactly what your cost patterns do, and do not, include and what level of service they are purchasing.

SUMMARY

The process to use in setting fares to charge other agencies can be summarized as,

- find out what it costs you in addition to your current expenses to serve new trips,
- add those additional costs to your current expenses or costs per trip if they represent a disproportionate increase, or
- recalculate your average cost figures if this is a fairer way of recognizing the impact on your cost patterns of selling services,
- charge different fares for different types of services, if those services create different cost patterns for your system,
- charge the same price or fares, if at all possible, for the same kind of service

It is wisest to avoid complicated fare structures which require detailed bookkeeping and which tend to confuse community agencies. On the other hand, we do advise charging different prices where the services you will provide really create different impacts on your system. In short, you will have to make a trade-off between the need to keep your fare structure simple so people will understand it and the need to ensure that you recover all the costs you expend in providing service.

You may recognize that it is possible to vary your prices to represent differences in your operating patterns, or as we have called it, your marginal costs. For example, you may have vehicles and drivers which are not fully utilized three to four hours in the middle of the day. You may feel that any money

which you bring in for services sold during that period is "gravy". Many airline promotional fares work on this basis; airlines sell tickets during their slack periods for their marginal, not their average, costs.

However, airlines have a network of published schedules, advertising agencies and travel agents to explain their fares. Moreover, their clients may be a little more sophisticated than yours. Because setting fares for marginal costs-only during certain parts of the day creates different fares for the same service, it can also create the impression that your system is unfair and arbitrary.

Different fares for the same service, when those differences are based on something inherent in your system and not something inherent in their clients or trip patterns, are a cause of confusion to many agencies. Where possible, we advocate setting differential fares only for differential services and widely publicizing the basis of those differences.

If you do feel compelled to set rates at a marginal cost to increase utilization, you must make sure that all agencies understand that the fare charged is limited by both type of service and time of day (or day of the week).

This Chapter has attempted to give you a way to assess your potential to sell transportation services and several methods to calculate charges for those services. One important component of all methods is to add any additional costs or expenses which will be generated by selling transportation services.

Chapter Four discusses another important, non-cost feature which you must consider; the impact on the quality of service which you provide. It is possible for your involvement in a coordinated option to have little to no cost impacts but to have significant impacts on the quality of service which you deliver to your clients.

Chapter Four

How Can You Evaluate the Quality of Service Offered by a Coordinated System

INTRODUCTION

Many social service agencies considering changing their current method of service provision are understandably concerned about the quality of service which their clients will receive under coordination options. What is surprising is how few of these agencies really know the specific performance parameters of their current services.

Before you change your method of service provision, or begin new services, you must attempt to understand both the current level of service you provide, or that you wish provided, and that level of service you will obtain in a coordinated arrangement. This concern is equally important for those selling services as well as those buying services.

You may not be able to have exactly the same level of service that you currently provide if you choose a coordinated arrangement. Clients may have to make advance reservations, they may have to wait for service, and they have to ride on-board a vehicle for a longer time. But accepting such service parameters may allow you to lower your costs, or serve more clients, or serve existing clients more often.

When you begin negotiating for some sort of coordinated arrangement, you must have a firm idea of not only what level of service you would like delivered

to your clients, but the level of service that you could accept. Since you can't have perfect service, at least not for more than one or two clients, you must understand what cost and service trade-offs you can make.

Some agencies contend that only their own staff can provide the very high quality of service currently delivered to their clients. Indeed this may be true. But the important question is: in a world of scarce resources and growing costs, can you afford to provide that very high level of service if it means that some of your clients are going without any service?

This Manual does not and cannot tell you what kind of service you should provide to your clients. The Manual does, however, provide human service agencies with some guidance on how

- to evaluate the quality of their own services
- to calculate the costs incurred in providing a certain level of services
- to consider the kind of service and quality trade-offs that are possible

Therefore, you could use this Manual (with others in the series) to measure the quality of service you currently provide 1) to consider how many more clients you could service, or how many more trips you could provide, or how much money you could save if you accepted a different level of service, and 2) how to know, in fact, what level of service would be provided to you in a coordinated system.

As you compare your current system with coordination alternatives, you should note the following:

- if you are comparing purchase of transportation service to your current option, you should compare your current level-of-service (however measured) against that offered by the other provider
- if you are going to sell transportation services to a coordinated provider, you should try to think about the possible impact of your participation on the level of service you deliver in the future to your own clients. (Note: To do this competently requires you to undertake the analysis suggested in Manuals One and Five.)

MEASURING AND EVALUATING PERFORMANCE

Many performance indicators are very difficult to measure or even to specify. Yet before you begin coordinated service you should try to compile a list of the service features that are relevant to your agency and some standards by which they can be measured. In this way you can compare your current system to other alternatives, and you can let the alternative provider know of your concern about the specified performance measures.

Even if performance standards are difficult to measure, you should make some attempt to specify how well you are currently doing with regard to those objectives and how well you expect the alternative provider to do. It is hard to compare performance and level-of-service indicators if they have no objective measures. Moreover, unless you tell an alternative provider of your concern about specific performance standards, s/he may not pay special attention.

In the following sections we will discuss a number of very general performance and level of service indicators. While more sophisticated measures are available, we suggest that you should understand at least these basic ones before you can evaluate alternative providers.

Remember that you must consider the impact of your involvement in a coordinated delivery method on your service parameters whether you are buying or selling service. If you are selling transportation, you may affect the current level of service which you are delivering to your clients just as drastically as if you had suddenly bought them service from another provider.

There are two classes of general level-of-service indicators. The first class are those that, while having a significant non-quantifiable component, can be measured or given limits. The second class of level-of-service indicators are those that are far more subjective. They often cannot be measured but they can be observed and evaluated. Each class will be discussed below. You can use Worksheet Four to help you compare these indicators.

CLASS I INDICATORS OF SERVICE LEVEL

We will examine six types of level-of-service indicators grouped in this class. They are:

- Type of service
- Day and time service is offered
- Trip-type limitations
- Riding time

- on-board
- waiting time

- Wait required to qualify/access the system
- Response time

Type of Service

Many agencies currently provide a very high quality demand-responsive service. Clients call whenever they need transportation and they are often immediately served. Coordination options can offer such services; taxi operators selling services are a good example. But the majority of more cost-effective services, including those delivered by taxis, require advance notice or have reservation requirements.

If you are currently providing one type of service, and the coordinated system offers a different type of service, this difference must be recognized. There is a clear trade-off; by asking your clients to accept the inconvenience of a 24-hour notice, you may save money and conceivably serve more clients. Much of your willingness to make this trade-off will depend on how much staff time or money you do save.

If you decide to purchase group trips or regular subscription trips (i.e., the same people travel a number of times each week to the same destination from the same origin), the level of service for this indicator should not drop.

If you are currently providing service in your vehicles, and you offer to sell transportation services to a coordinated system, you should consider the impact of that involvement on your own clients. Your participation in a coordinated effort may require you to schedule your own clients' trips more closely in order to keep available the blocks of time or space that you are selling. If your clients do lose convenience or instant response, there is some loss of service quality.

Day and Time Service is Offered

It is obvious that the more days and the longer the hours any system operates the more likely it is to be responsive to client transportation needs. This indicator of service alone is fairly easy to see if you know how many hours and how many days you operate. You should ask the coordination system how long their services are available to your clients.

Note that the formal hours of system operation are not necessarily the same as the times and days during which the services can be used by your clients. For example, (and this will be discussed below), if the system is totally booked with routine or scheduled trips during the morning peak hours, your clients needing random trips during that period cannot be accommodated.

Trip-Type Limitations

Many agencies and many coordinated transportation systems cannot provide all required transportation services. Therefore, they limit client trips to those given highest priority (generally medical, work and school trips). Other agencies and systems are required by policy board or funding sources to limit aided tripmaking. You need to look at the formal and informal policies of your agency that specify what kinds of client needs will be met. Then you can compare your current limitations, if any, against any actual or inherent limitations in the coordinated system.

Larger coordinated systems often do not have formal trip restrictions. In fact, they may be quite willing to enforce your restrictions on your clients in the in-take or scheduling process. Again, however, systems with capacity problems may be informally favoring certain types of trips, particularly routine and recurring trips like work and school.

Response Time

This term is usually used only in conjunction with demand-responsive trips or the demand-responsive return part of a scheduled trip. The measure refers to the time elapsed from the point a client calls a provider to the time the provider actually arrives.

Usually response time, like many measures, is determined on an average basis. This is an important service indicator but it is very difficult to measure. To do so, it is necessary to have the client or the contact person record the time the provider was called and then record the time the carrier arrives. If you are evaluating your current service, you must do this a number of times on representative days in representative weeks. You can then compare your service level to that of the alternatives available.

Total Trip Time

There are two components of the total amount of time a client commits to a trip:

- on-board time
- waiting time.

Each component has a different weight in different types of trips (i.e., demand-responsive vs. scheduled group).

On-board. This indicator is also called travel or ride time. It is the time spent from the minute the client is boarded to the minute the client alights from the vehicle. This time can be drastically affected by the type of transportation service offered. Every deviation to pick-up or drop-off of a

passenger other than the first rider lengthens the travel time of the first rider. For example, a demand-responsive exclusive ride service would offer a shorter travel time for the same length trip than would a group many-to-one vehicle trip.

This service characteristic is affected not only by the type of service offered but by the geography of the service area and the demography and mix of the riders. For example, severely handicapped people may take more time to board and alight than the able-bodied clients. Travel time is, however, susceptible to some control through efficient dispatching.

Waiting Time. This indicator has two components. The first is the time the client spends waiting for the vehicle at home. Usually the only time that is accrued for this indicator is the time between the appointed time of pick-up and the actual arrival of the vehicle.

Example: *Calculating waiting time*

You provide scheduled service each day to three people. A section of one day's driver's manifest shows the following

Client	Home Address	Scheduled Time	Actual Pick-Up Time
Mr. Brown	11 Maple St.	8:40 a.m.	8:49 a.m.
Mrs. Jones	14 Elm Avenue	9:00 a.m.	9:05 a.m.
Mrs. Smith	17 Oak St.	9:15 a.m.	9:30 a.m.

If this were an average day in a typical week, you might want to calculate average waiting time:

Brown waited 9 minutes
Jones waited 5 mintues
Smith waited 15 minutes

Total: 29 minutes

Divided by 3 clients = 9.66 minutes' waiting time at home

Note that this is only half of each person's trip. There might be more waiting time at the other end.

The second component is the time clients spend waiting for the vehicle to come to take them home (or to their final destination). It is important to note that many studies show that people are less upset about time waiting at home than waiting away from home. Although this may be common sense, it means that waiting times have different value to your clients. A total waiting time of 30 minutes is very different if it is 5 minutes at home, and 25 minutes at the doctor's office, or 5 minutes at the doctor's office and 25 minutes at home.

Note that for a fully demand-responsive service (such as a conventional taxi) the response time measure is the same as the at-home waiting time. (Be sure to count it only once when calculating total waiting time.)

Again, waiting time is a difficult indicator to routinely measure. It is difficult to say what impact participation in a coordinated effort will have on this service indicator.

Combining Travel Times. Studies show that travellers put a different value on different travel-related times. Just as people value waiting times differently, so they value on-board and waiting times differently. People don't find on-board time as much of a burden as either away-from-home waiting or in-home waiting! The last part is initially a surprise, but it appears that people who are waiting for a vehicle that is late build up some anxiety and tension.

Therefore, while it is common to add up all waiting and riding time together (when the data are available), you should recognize that many clients might prefer a longer riding time with a shorter waiting time to the opposite set of characteristics, if total time is the same.

Waiting Required to Quality/Access the System

This indicator refers to any administrative delays before your clients are considered to be eligible to receive transportation services from the coordinated system. This is not usually a comparative measure and often it is an additive one if you join a coordinated system. For example, your current process for determining whether a client is eligible for transportation probably will remain unchanged. Added to that time will be any delays created by the enrollment process of the coordinated system.

Such processing problems are minor if they occur only once. For example, if you purchase group or scheduled trips, or if you seek service for a given number of specified clients, you may experience only the initial administrative delay. However, if you have a rapidly increasing client load, or there is constant client turnover in the service you provide, or your clients need travel assistance only sporadically, system processing requirements may be a deterrent to immediate system use.

CLASS 2 INDICATORS OF SERVICE LEVEL

The six types of indicators considered here are:

- Driver attitude and training
- Vehicle appearance and condition
- Riding conditions
- System response to scheduling problems
- Response to criticism and suggestions
- Manner in which requests for service or information are handled.

Driver Attitude and Training

Perhaps the most common service concern of agencies considering coordination or purchase of service is how new system drivers will treat their clients. This is a genuine but often needless concern. It is certainly one which can be constructively addressed by driver training.

Driver attitude in a coordination system is often not a serious problem for several reasons. First, most social service agencies may not have hired quality drivers to begin with. Agencies rarely have access to professional drivers, and rarely have funds to adequately train the drivers they do have. Turnover is high, especially if CETA drivers are used.

Most - although not all - coordinated systems can pay higher wages, offer more job opportunities, and can train drivers. In most cases, social service agencies gain higher quality driver service by participating in a coordinated system.

Second, actual experience suggests that while negative anecdotal stories abound, most traditional operators (i.e., taxis and transit) provide competent, well-intentioned driver services to clients of social service agencies.

The issue of driver training itself is a serious one. No matter how well-intentioned drivers are, they still must be trained to deal with the diverse needs of clients of social service agencies. If you purchase service from a coordinated system, you must consider 1) if the drivers have been trained as general social service drivers, and 2) if they have training in the particular needs of your clients. For example, special skills and training are required to respond to the needs of the physically handicapped, or the mentally retarded or the blind, etc. If your clients are functionally different from those currently being carried by a coordinated system, the drivers generally will require some additional training to deal adequately with your clients.

Vehicle Appearance and Condition

It is obvious that your clients would prefer to ride in clean and well-maintained vehicles. You can easily compare the status of your vehicles to those of a coordinated system.

A slight problem arises if the coordinated system uses vehicles that are very different from your current ones in either color or design. Some clients become accustomed to the doors on certain vehicles or the logo on certain vans; they get confused or troubled if different vans show up. Since many coordinated systems utilize the varied vehicles of more than one provider, it is always possible that your clients will see different vans each day. Several agencies have problems with (often elderly) riders refusing to board "strange" vehicles.

These problems can be addressed with some foresight. First, you may need some passenger training or familiarization programs prior to joining the coordinated system. Second, you might ask the system to have at least a common, very visible logo or symbol painted on each vehicle utilized.

Riding Conditions

This category covers a number of operating characteristics, most of which are easy to experience and difficult to measure. Among the riding characteristics of concern are how crowded the vehicles are, how bumpy or shaky the ride is, and how fast the vehicle stops and starts.

You probably should indicate to the coordination system your concern over quality of ride and ask them to monitor these factors. In part, they can be addressed by driver training; in part by maintaining vehicles properly.

System Response to Scheduling Problems

Two issues are of concern. The first is how you and the coordinated system respond to immediate problems - someone wasn't picked up today; a driver left people at the wrong doctor's office. The second is how a system responds either to heavy booking or overscheduling.

In the short term, many systems have problems with "no-shows", i.e., the client isn't where he or she should be. Alternatively, the system may forget or miss a pick-up. How responsive a system can be to these problems, once discovered, depends in part on whether vehicles are radio-equipped and what the system policy is in these situations.

A phone call to the client by the dispatcher while the vehicle waits can correct some no-show problems; for example, those where the driver is at the wrong address, or the client forgot the trip and did not hear the horn. Dynamic re-routing of a vehicle to pick up someone missed is one option; having a back-up vehicle or a regular taxi is another response.

You should accurately assess your current response to such problems and ask the coordinated system to tell you what 1) their experience rate with such problems is, and 2) what system response they make in such situations.

A more long-term issue is that many systems have heavy demands on their vehicles during certain peak periods. These demands may use up all available capacity. If your clients need to occasionally travel during those periods, they may be refused service. If they need to schedule routine trips (like dialysis medical trips), they may have to wait weeks for a slot "to open up". You should know if you currently face this capacity situation (either overall or during certain periods of the day) and if the coordinated system does.

If you are purchasing demand-responsive or occasional service for your clients, you must know (as suggested in several sections above) how often the system totally refuses service (and when) or asks the client to re-schedule a trip. (The case will usually not arise for group service.) You may be willing to accept this service constraint, but it should be reflected in the fares you are charged.

System Response to Criticism and Suggestions

This seems like a simple, if difficult to measure, indicator. However, the real question is how responsive you are to requests for service modifications, and how responsive the coordinated system can be. A formal complaint policy is often helpful but the determining factor is how willing a system operator is to listen to complaints, investigate them in a reasonable time, and make changes if possible. For example, if one client is continually picked up 15 minutes late for a congregate meal and the system can't seem to change that situation, you have a real problem. Have they really investigated viable options (such as scheduling the person to be picked up by a different van)?

In many ways, this is a difficult indicator to use. It is hard to be honest about your current services and difficult to predict what a coordinated system will do. The best way is to ask other agencies what their experiences with the coordinated system have been.

Manner in Which Requests for Service or Information is Handled

This is both a procedural and substantive issue. What happens to clients who call for service or information? Are easy-to-obtain direct phone lines used or do clients have to go through switchboards and have to know exactly for whom to ask? Are there enough phone lines or will clients constantly get a busy signal? When they get through, will clients find a trained person with all information accessible or will they be put on hold or told to call elsewhere or treated peremptorily? Again, courtesy is important but the client also needs correct, timely information.

This is another difficult indicator. Again, it is hard to assess your own system and hard to know what to expect from the coordinatd system.

HOW TO GET NUMBERS FOR QUALITY OF SERVICE INDICATORS

The sections above have briefly indicated how you can get needed information on both your own system and the coordinated system. First, some very quantifiable measures of your current system (i.e., waiting time, etc.) can be obtained from your vehicle and driver manifests if they are well designed and used. (Manual Five describes how to use some alternative trip logs. That information cannot be repeated here.) You would probably want to take a sample of representative days in a representative week. If the driver logs do not carry pick-up and drop-off times, you could design a sample survey to gather information.

Some quantifiable measures do not usually or always appear on manifests (i.e., response time). To measure those variables in your current system, you would have to do a sample survey. Many of the more subjective indicators can only be measured through such a survey (i.e., driver attitude) or through random inspections (i.e., vehicle condition) or through concerted analysis (i.e., response to criticism.)

This manual has taken the basic view that system information is generally available either from the system management (most quantitative indicators) and/or from other agencies currently obtaining service (most more subjective indicators). Rarely would you be in the position of calculating another system's quality of service indicators.

You will have noticed, however, that as the Manual started through a discussion of the more subjective indicators, it became less likely that 1) any coordinated system would really know its measurement for that indicator, and 2) that it could be measured before you began participating.

This doesn't mean these indicators are useless; it only means that you cannot use the indicators now to compare costs and effectiveness as you analyze your transportation options. You should use such indicators in discussions with system management 1) to show your interest in these quality parameters, 2) to request that methods be set up to monitor these indicators once you begin participating, and 3) to add to contracts as performance requirements.

HOW TO TRADE OFF COSTS AND QUALITY OF SERVICE

There is no way to do so that will bring you to the one right decision!

Worksheet Five

Comparing Level of Service Characteristics

	Your Current System or Service	Under a Coordination Option
Class 1 Indicators		
•Type of Service		
•Day and Time Service if offered		
•Trip-type limitations		
•Response Time		
•Total trip time		
-on board		
-waiting		
•Wait to Access system		
Class 2 Indicators		
•Driver Attitude and Training		
•Vehicle Appearance and Condition		
•Riding Conditions		

	Your Current System or Service	Under a Coordination Option
Class 2 Indicators (cont'd)		
•Response to Scheduling Problem		
•Response to Criticism		
•Requests Handled		

Example: *An "easier" decision in trading off costs and services*

You currently purchase service from a non-profit provider for both your handicapped and non-handicapped clients at $8.40 per one-way passenger trip. A taxi operator offers to provide the non-handicapped travellers' trips for $6.70 per one-way passenger trip. All service indicators are the same or better with the taxi operator.

Example: *A harder decision in trading off costs and services*

You currently purchase random, on-demand transportation services for some clients from the taxi operator for $6.70 per one-way passenger trip. A coordinated system offers to carry those clients at $3.00 per trip but they must request service 24 hours ahead of time and they generally won't be able to travel between 8:00 a.m. and 9:30 a.m. All other service indicators are equivalent.

Again, you should note that there is growing national sentiment that federal laws and policies ought to be changed to force you to choose the cheaper alternative. As of this time, the choice of trade-offs is still yours.

That choice is a subjective one. It depends on a realistic assessment of

- your current regulations and requirements
- your current service restrictions
- your current financial support
- the likelihood that that financial support will continue
- the percentage of all your clients that need transportation services
- the percentage of those clients that are currently provided neeeded transportation services.

There are a number of issues which do not directly involve cost or quality indicators. These issues are suggested by the discussions here and are important when considering the purchase of transportation services. Briefly, they are

- the long-run value of a coordinated system to the community
- the competence of the overall management of the system or operation
- the stage of development of a coordinated system
- the financial resources and commitments of the system or provider
- the reputation and status of the system or provider
- the trust and level of communication between your agency and the coordination system or alternative provider.

These issues all do, and should, motivate your decision about transportation alternatives. They will be discussed in the next Chapter.

SUMMARY

This Chapter has discussed many of the qualitative aspects of transportation provision over which you should have some concern as you either buy or sell service. Note that a concern with quality is meaningless without some measures and standards to evaluate service quality. You can't compare your current system without some idea of how well you are currently doing.

Chapter Five will raise some important administrative and organizational aspects of coordination.

Chapter Five

A Consideration of a Range of Coordination Factors

INTRODUCTION

The preceding Chapters have stressed the financial and service aspects of coordination. However, there are other administrative and organizational issues you must consider as you begin any type of coordinated program.

Your decision to buy or sell services to a coordinated system will be based in large part on the cost of time savings and the kind of service which your clients will receive. However, administrative factors may well impinge on these variables. Coordination options which would otherwise be very advantageous to you may be less so if the program has legal or statutory difficulties or fails to start service when expected.

Coordination can be a complex and complicated process. Many of the problems caused by this complexity can be dealt with in advance, if the problems are recognized early and dealt with effectively. The literature in this field describes many projects facing very similar problems; some dealt easily with their problems and thus achieved substantial coordination benefits. Other systems or projects were not so fortunate.

This chapter adopts a different format than the rest of the Manual; it asks you to answer a series of questions which touch on all the major cost and non-cost

factors which your agency should consider. In actually answering the questions, it will be necessary to do cost calculations for some questions, and to think seriously about your goals to answer others. You can also use the series of questions as guidelines or warnings of the promise and pitfalls of coordinated systems.

Each individual coordinated project faced unique and specific local problems. However, studies show that the following factors can be of vital concern to:

- licensing and permit requirements
- insurance requirements and restrictions
- labor agreements and union restrictions
- prohibitions on expenditures or project funds
- client eligibility criteria
- client service requirements and restrictions
- vehicle requirements
- bookkeeping and recording requirement.

Although no two coordinated systems are exactly alike, there are often common themes and characteristics. The series of questions appearing in this Chapter raise many of these common themes without suggesting that they are necessarily true in your community. The geography, weather, politics, and economics of your city may determine what kind of coordinated system will work, and which kind won't work for you.

You can learn some useful things from the experiences of others. The series of questions that follow is designed to alert you to those mutual experiences and the common themes found in coordination efforts. Your answers will be shaped by your community's characteristics as well as your own needs.

HOW TO USE THIS QUESTIONNAIRE

In order for this examination of your alternatives to have any value, you must carefully consider your answers to the questions. If you are very interested in developing a coordinated system in your community, you may be tempted to easily answer "yes" to every question. If, on the other hand, some funding source or planning body is forcing you to consider a coordinated effort and you are sure it will not work, you may quickly answer "no" to every question.

BE FAIR. Consider the issue that is raised by each question and weigh your answer carefully. If you are initially against a coordinated scheme, you may be surprised to learn that it might offer your agency some real and positive benefits. If you are very supportive of the idea of coordinated transportation services, you may be surprised to see that there are barriers to the successful implementation of such programs.

You can use the questions to alert yourself to important factors which may hamper or impede the development of a coordinated system. The different issues each coordination option may raise for you are identified in the questions you are asked to answer.

Your Potential for Coordination

Questionnaire instructions: Enter your answer in the blank opposite the italicized questions with one of the following appropriate answers:

NA	Not Applicable
Y	Yes
N	No
U	Unknown

I. SHOULD YOU PURCHASE SERVICE FROM A COORDINATED EFFORT?

A. DIRECT COST CONSIDERATIONS

Are the proposed out-of-pocket costs for some or all passenger trips less than your current costs? _____

(Chapter Two of this manual shows you how to calculate your costs. The coordinated program should be able to quote you their rates).

Are the proposed current or projected costs per passenger trip lower than the future costs you anticipate? _____

(For example, will your costs which may be lower now suddenly increase in the near future because you have to buy a new vehicle or have to hire a regular driver to replace a CETA driver? Refigure your current costs as shown in Chapter Two allowing for these changes.)

If you cannot purchase service for all your clients (or the costs are not lower for all of your clients), will you still save money if you purchase service for some but not all? _____

(If you can purchase service for some but not all clients, you must calculate a) how much you will save for each client contracted to the coordinated effort and b) how much more, if anything it will cost to transport your remaining clients, then

c) you should calculate total costs involved for the new arrangements and d) compare them to your previous total costs. Chapter Two will enable you to do all these calculations. For example, if the coordinated effort can't carry your severely handicapped or mentally retarded clients, how will you transport them? If you keep a bus and driver to serve them, what will your total costs be? If you contract with a taxi operator?)

Can you save money, under the rate structure offered by the coordinated program if you group your clients together? _____

Can you afford to budget enough of a staff person's time to handle all your remaining responsibilities such as screening clients, monitoring the service, checking and paying vouchers, etc.? _____

(These obligations all represent a real cost to you; some of them (like paying vouchers) have to be done promptly and correctly or you will soon hear complaints. You may be tempted to let others such as monitoring and evaluating the service slide, but you will pay the price later for failing to properly carry out these activities.)

B. BUDGETARY AND ADMINISTRATION CONSIDERATIONS

Can you free up money you now have committed to transportation provision so that you actually have cash with which to purchase client services? _____

(For example, if someone is driving for you part-time, can you reclaim that salary or will the person simply be shifted to other agency duties if the agency no longer provides transportation services?

If all your driving and maintenance is done by volunteers, or your insurance is paid by your national parent organization, these very real costs cannot be converted into cash.)

Can your transportation budget tolerate monthly fluctuations in charges? _____

(If you are paying a coordinated program by the one-way passenger trip, unless you can predict exactly how many trips each of your clients will take, you will have to pay different amounts each month. Can your bookkeeping system and cash flow accommodate such "ups and downs"? Also, if the coordinated program offers you discount rates when more than one of your clients travels at the same time (a desirable feature) it becomes even more difficult to predict what your monthly bill will be.)

Are all the financial and contractual arrangements required by the coordinated program consistent with your requirements and those of your funding sources? _____

(For example, if the coordinated program charged you for a client no-show, are you allowed to pay, since no service was really provided to your client?

Are the trip records provided by the coordinated program sufficient for your needs? Often the transportation provider may only be able to give you the names of travelers and the day they traveled but not where they went or how long the trip was. Will this be enough? Would they be willing to provide you with sufficient information?)

Can you commit to the coordinated program for a short, specified time period, at least initially? _____

(For example, could you try out a "demonstration program" at one of your centers or facilities for a limited time to see if you like the services?)

Will the program's costs per passenger trip remain the same or decrease if your agency joins? _____

(If the coordinated program is working efficiently, it should use your clients to increase overall vehicle productivity (by grouping more rides, better dispatching, etc.). This should immediately or eventually lower the program's average costs.

If the program is a new one, your participation might initially create higher costs because more vehicles will be used, longer trips will be taken, etc. However, the program administration should have plans to build the system so that average costs eventually fall.

If the coodinated program is not a new or expanding one and your participation raises their costs, this generally means they are a) at capacity or b) inefficiently managed.)

C. QUALITY OF SERVICE CONSIDERATIONS

Is the level of transportation service offered to your clients equal to or better than that they are currently receiving? _____

(To answer the question, you must understand a) exactly what service characteristics are important to you and your clients and b) what level of service your clients are currently receiving. For example, if you feel your clients' ride times shouldn't be increased, you must have some idea of what ride times they are now incurring. Will your clients have to wait longer for pick-up or have to ride on-board the vehicle longer? Chapter Four discusses these issues.

You should also note that if it is allowable to your funding source, you may choose a significantly cheaper service that is slightly lower in quality than current services. This may allow you, for example, to provide service to far more clients. This is your decision but you must make it knowingly. Chapter Four discusses this issue.)

Will the coordinated system carry all your clients, and for all trips? _____

(Some coordinated services cannot or will not provide transportation services for certain clients, such as the mentally retarded, or the blind.

If the coordinated system will not carry all your clients, you should still seriously consider it. But it will affect your overall costs. (See Section I.A. above.)

Will you be able to have some impact on the services delivered by the coordinated programs? Can you seek and get justified service modifications? _____

Can you monitor service quality in some way without having to wait for client complaints? _____

If you get client complaints, is it easy to track down the source of the problem? _____

(For example, if a client calls to say he wasn't picked up as promised, does the coordinated program keep the kind of records that will allow them to find out where the process didn't work correctly and why? Can they say if the dispatcher made a mistake or that the driver did or perhaps that the client is confused?)

If your clients will be mixed with the total system's clients, are your clients similar to the majority of the system's clients? _____

(For example, if your clients are severely handicapped, they may require a great deal of driver assistance and boarding time. This may increase the waiting and ride times of all the coordinated system's passengers. Conversely, if your clients don't require that much assistance, they may be delayed by the needs of more handicapped passengers.

Your clients may also resent being mixed with many other kinds of riders. You may wish to let your clients know ahead of time that such mixing will lead to better and cheaper transportation service in the long-run.)

Are all vehicles in the coordinated system equipped to handle the special needs of your clients? If not, are there sufficient vehicles to handle the needs of specific clients without undue delays and lengthy waits? _____

(For example, if only a few of the coordinated program's vehicles can accommodate wheelchairs, such vehicles may have to be dedicated totally to serving the needs of such riders. If a system's vehicles are not largely interchangeable, the program will not be able to efficiently use all vehicles to increase average vehicle productivity. Moreover, your clients may receive poor service.)

Are all potential system drivers trained to deal with the needs of your clients? _____

Does the system hold promise of developing into an important and stable part of the social service network? In the long-run will it make a major contribution to your community?

(For example, you may be willing to incur some higher costs initially or share some risks if the coordinated program has the potential for alleviating the ever-expanding transportation problems of your clients and many other social service agencies.

This is a very important cost and service question that you should consider carefully.)

II. SHOULD YOU SELL TRANSPORTATION SERVICES TO A COORDINATED SYSTEM?

A. DIRECT COST CONSIDERATIONS

Will your total costs for some or all of your passenger trips be less than your current costs?

(Again, to answer this question (as with Question I.A.) you must know exactly what your costs are. Use Chapter Two of this manual to calculate your current costs.

It may be more difficult to calculate what costs you and the coordinated system will incur. If you participate, you must have some idea in advance; if the lead agency organizing the coordinated program is predicting a cost figure, use Manual One to check the comprehensiveness and reasonableness of their predictions.

If you are the lead agency or that agency has not estimated their costs, use Manual One to estimate what costs the entire system will incur under several different sets of assumptions. That is, compute the costs if different combinations of community agencies participate, and perhaps participate in different ways.)

Are your vehicles available and appropriate for the coordinated program without expensive purchases or alterations?

(For example, will you have to purchase two-way radios? Will you have to install a wheelchair lift or tie-downs?)

Will you be paid (or credited) for all the expenses you incur for your vehicles, drivers and other facilities? _____

(To answer this question, you must understand exactly what costs you do incur in maintaining vehicles, drivers, etc. Use Chapter Two to help you figure out what these costs are. Then you must determine which, if any, you will still retain.

Remember that it is possible for you to retain some expenses even if you're no longer providing <u>any</u> transportation services. You may still wish to screen all your clients' trips or to group those trips yourself. That may be all right with you but you should be sure you understand and expect these remaining costs in advance.)

Will any expenses you continue to pay remain the same or decrease? _____

(For example, have you checked with your insurance agent to be sure that your insurance premiums will not increase if your vehicles are put in more active service or are out of your control? Your maintenance costs may increase sharply if your vehicles are more intensively used. Your employee insurance benefits and workmen's compensation premiums can be affected if the conditions of employment change.)

Will your drivers have to be retrained? _____

(For example, if you are currently carrying only able-bodied seniors, your drivers may have to be trained to deal with the retarded or handicapped.)

Do you have blocks of a <u>driver's</u> time that can be freed up and sold/given to the coordinated program?

(For example, you may be using two or three hours a day of the time of a staff person who has additional responsibilities (and is paid) for the remaining five to six hours a day. Is it feasible and possible for that person to report to some other location to drive for the coordinated program? What will happen to the other duties if that person is late or the vehicle breaks down?)

Can you free up your vehicles for the large blocks of time that may be required? _____

(Does the agency coordinating the program understand what time limitations there are on their use of your vehicles? Can that lead agency use your vehicles efficiently within those constraints?)

B. BUDGETARY AND ADMINISTRATIVE CONSIDERATIONS

Can your agency tolerate uncertain and possibly fluctuating payments as the system organizes? _____

Are the billing procedures, records of trips and other reporting documentation adequate for your needs and those of your funding source(s)? _____

Can you make a short, finite commitment to the system as a test or demonstration? _____

Will you be able to have some impact on the way services are delivered by the coordinated program? _____

III. SPECIAL ISSUES FOR A PROGRAM THAT IS IN THE PROCESS OF BEING ORGANIZED

Will the coordinated program get off the ground even if your agency does not participate? _____

(It will be a burden on you if your participation is essential to the initial success of a coordinated program. You may be willing to assume this burden but you should do so knowingly.)

Are there sufficient up-front monies, vehicles, etc. to begin providing service even if all potential participants are not able to participate? _____

(Many coordination attempts have been delayed for months because there weren't enough vehicles or staff to start service, pending grants were delayed or not approved or initially favorable agencies were unable to participate. If you have made many plans contingent on the start-up of a program and it doesn't start promptly, you may face serious problems. In fact, by the time the coordinated service actually begins, it is possible you won't be able to participate because you may have made other commitments in the interim.)

Can the coordinated program guarantee certain rates and a given level of service from the beginning of its operation?

(Is the coordinated program informed enough to make a reliable estimate of the costs and of its ability to use its resources effectively?)

Has the coordinated program actually obtained all necessary legal, regulatory, and administrative authorizations?

(For example, has the program obtained FCC approval for 2-way radio use? Has the program checked to see if the operation of the coordinated service makes it liable to regulation by the State's Public Utilities Commission? Does some or all of the money to be used in the coordinated program come with restrictions which have to be met? If so, have they been? Each of these situations can create lengthy start-up delays, especially if the coordinating agency is unfamiliar with each process.)

Is there a lead agency which has taken major responsibility for organizing the program and for securing all necessary legal regulatory and administrative approvals?

(If no one agency has assumed responsibility for the myriad of organizational details to which attention must be paid, the program may well falter. Complicated arrangements such as these don't just happen even if it is obvious that they have tremendous value. Hard and continued effort is required over long periods of time.)

CONSIDERING YOUR COORDINATION POTENTIAL

PURCHASING SERVICES (SECTION A)

To give you a rough idea of how good a candidate you are for purchasing services from a coordinated effort:
First fill in the blanks below.

FOR QUESTIONS IN I.A.

Number of Yes _____ No _____ Unk _____

Multiply all No answers by 5 = _____

Multiply all Unknowns by 5 = _____

(That's right, Unknowns should count as "No" until you get the correct answer.)

FOR QUESTIONS IN I.B.

Number of Yes _____ No _____ Unk _____

Multiply all No answers by 3 = _____

Multiply all Unknowns by 3 = _____

FOR QUESTIONS IN I.C.

Number of Yes _____ No _____ Unk _____

Multiply all No answers by 2 = _____

Multiply all Unknowns by 3 = _____

SELLING SERVICES TO A COORDINATED PROGRAM (SECTION B)

To give you a rough idea of how good a candidate you are for contributing your vehicles to a coordinated program:
First fill in the blanks below.

FOR QUESTIONS IN II.A.

Number of Yes _____ No _____ Unk _____

Multiply all No answers by 5 = _____

Multiply all Unknowns by 5 = _____

(That's right, again Unknowns should count as "No" until you get the correct answer.)

FOR QUESTIONS IN II.B.

Number of Yes _____ No _____ Unk _____

Multiply all No answers by 3 = _____

Multiply all Unknowns by 3 = _____

IS THIS PROGRAM IN THE PLANNING OR EARLY IMPLEMENTATION STAGE? (SECTION C)

If so, you should have answered the questions in Part III. If it isn't (and you didn't) skip this section and go to the next section, "Adding Up Your Score." If you did, fill in the blanks below:

FOR QUESTIONS IN III.

Number of Yes _____ No _____ Unk _____

Multiply all No answers by 4 = _____

Multiply all Unknowns by 4 = _____

ADDING UP YOUR SCORE

PURCHASING TRANSPORTATION SERVICES

For determining your potential for purchasing service from a coordinated program that isn't in the planning stage, add up all the numbers in the right hand column of A only.

If the total is -

0-16	you're a good candidate
17-34	you're a fair candidate
35-58	you're a poor candidate

If the coordinated program is in the planning stage and you answered questions in Section III, add up all the numbers in the right hand column of both A and C above.

If the total is -

0-20	you're a good candidate
21-40	you're a fair candidate
41-78	you're a poor candidate

SELLING TRANSPORTATION SERVICES

For determining your potential to sell to a coordinated program which is not just beginning, add up all the numbers in the right hand column of B only. (If you answered questions in Section III, skip this section and go to the next.)

If the total is -

0-15	you're a good candidate
16-32	you're a fair candidate
33-47	you're a poor candidate

If the coordinated program is in the planning stage and you answered questions in Section III, add up all the numbers in the right hand column of both B and C above.

If the total is -

0-20	you're a good candidate
21-44	you're a fair candidate
45-67	you're a poor candidate

SPECIAL NOTES AND CONCERNS

The approach suggested by this Chapter is essentially a cautious one. It is not, however, a negative one. It is not designed to show you that joining a coordinated effort is difficult or impossible. Rather, it is designed to help you identify a) how much you should expect to receive for your participation and b) what issues should be of concern as you consider joining.

Don't dismiss the issues raised even if you "scored" low in potential but still wish to pursue a coordinated program. If for any number of reasons you do wish to actively consider participating in such an effort, you should use this Chapter to anticipate potential problems and to be prepared for them. It can serve to guide you through the difficulties that always arise in new undertakings, no matter how meritorious.

If you did "score" as having poor potential for a coordinated program, are you really sure that you answered all questions fairly? If you have more than one or two unknowns as answers, you have not given the coordination idea enough study. In addition,

it is possible that some of your no answers are really unknown. You should make a greater effort to find out any missing information. Unknown data should only be a barrier if it is totally unknown; that is, if nobody in the coordinated effort can answer the question. You should not fail to consider an important idea simply because you have not had the time to find out missing information.

It is also possible that some of the no answers could be turned into yes answers by merely rearranging some of your accounting procedures or by asking the staff of the coordinated program to meet your specific needs. In fact, many of the questions to which you may have answered no are important administrative and organizational concerns. You could turn these factors into requests to the administration of the coordinated program. For example, if the system doesn't keep trip records in a format that you or your funding source requires, you could ask them to change. If they can't change their records, you should consider whether you can modify your reporting requirements before you abandon interest in a coordinated program.

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AVAILABILITY

Documents with an NTIS number are available to the public from the National Technical Information Service, 5825 Port Royal Road, Springfield, Virginia 22161. Those without numbers can be obtained if you will write to NTIS and be sure to include the full title and the author(s) name(s). Generally, both paper and microfiche copies are available; costs vary with the length of the document.

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Definitions and Formulas