

Measuring Transportation Costs in Child Care and Early Education Programs

FREDERIC B. GLANTZ

Abt Associates Inc.

INTRODUCTION

Child care and early education programs typically report costs on a line-item (e.g., object-of-expenditure) basis rather than a functional basis. That is, programs maintain and report the cost of resources (e.g., labor, supplies, rent/mortgage, utilities, etc.). Rarely do child care and early education programs maintain and report the cost of the uses to which these resources are put (e.g., administration, classroom/teaching, maintenance, parent counseling, health services/referrals, transportation, etc.). To measure the cost of transportation (or any other service) requires a system for allocating a program's line-item accounts across the various activities or functions that the program is engaged in. Measuring transportation costs requires that the researcher develop a *functional cost reporting system* (Shillinglaw & Meyer, 1983).

FUNCTIONAL COST ACCOUNTING FOR CHILD CARE AND EARLY EDUCATION PROGRAMS

The first step in the development of a system of functional cost accounts is to determine the specific activities for which costs are to be collected and reported. It is important to note that there is no unique set of activities for which the researcher (or program manager) should report costs. The number and types of activities included in the functional cost reporting system ultimately depends on the information needs of the researcher or program manager. Exhibit 1 illustrates three alternatives that might be used to identify and measure costs incurred by a child care or early education program.

Defining Activities

While the specific activities included in a system of functional accounts are tailored to meet the information needs of the user, it is essential that that the activities included in any system of functional accounts must be *mutually exclusive and exhaustive*.

Exhibit 1 Alternative Cost Reporting Activities in a Functional Cost Accounting System for Child Care and Early Education Programs			
	Intended Use of System of Accounts		
	Program Management	Estimating the Cost of Direct Services to Children & Parents	Estimating Transportation Costs
Activity Accounts	Administration Occupancy Teaching/education Parent counseling Health/dental screening Food/nutrition Transportation Other direct expenses	Administration Occupancy Direct services to children & parents Other direct services	Administration Occupancy Other direct services Transportation

That is, every cost incurred by a program must be included in one, and only one, of the defined activities; and, the list of activities must be capable of capturing any cost incurred by a program. This is sometimes easier said than done. For example, suppose that any early education program provides transportation for children to and from the center each day and requires that a teacher must be on the bus to supervise the children. The teacher sings songs with the children and reads stories to them. The cost of the teachers' time spent on the bus may be considered a component of transportation costs or may be considered a component of the educational program costs. While the decision rule for assigning such 'joint costs' is entirely up to the user of the system, the rules must be made explicit and unambiguous. For research cost accounting systems, the decision rules for assigning costs to activities must have face validity. Thus while there is face validity to assigning the cost of the teachers' time on the bus as either a transportation cost or an educational cost, the same can not be said for the cost of the drivers' time.

It is also important to distinguish between the direct cost of service provision and indirect or overhead costs. Indirect or overhead costs are costs that are incurred in the support of other activities but are too difficult or costly to directly attribute to these other activities. Note that while the number and type of activities vary in Exhibit 1, all three systems of functional accounts include two key activities: administration and occupancy. These are considered overhead or indirect costs since it would be extremely difficult and costly to directly assign the various administrative and occupancy costs to each of the direct services provided by the program. A portion of these overhead costs must be allocated to each of the direct service activities in order to measure the full cost of these direct service activities (including transportation services).

Attributing Costs to Activities

The starting point for estimating transportation cost (or the cost of any direct service) is an estimate of the *full cost* of operating a program, including those costs reported on a program's annual statement of income and expense and any hidden or unreported costs.¹ These costs are

¹ See the accompanying paper by this author: *Measuring Unreported Costs in Child Care and Early Education Programs*.

assigned directly or *allocated* to the activity accounts established by the researcher or program manager.

Direct assignment of costs. Objects-of-expenditure reported (or imputed) on the *Full Cost Statement (or Worksheet)* may be directly assigned to an activity account if the purpose of the object is clear. For example, the cost of food (or the assigned value of USDA donated commodities) may be directly assigned to the ‘food service/nutrition’ activity. Similarly, the cost (or annual depreciation) of buses and vans used exclusively to transport children may be directly assigned to the ‘transportation services’ activity account.

Allocation costs to activity accounts. Many cost objects are not so clearly tied to an individual activity account. This is the case for cost objects that are used for multiple purposes such as labor costs (recall the teacher on the bus). In such cases, it is necessary to develop an *allocation algorithm* to attribute costs to activity accounts. The most common allocation algorithm is the proportion of total staff time (or staff cost) devoted to each activity. This necessitates the use of some form of a time study to estimate the proportion of staff time spent on each activity. The most common method of conducting time studies in child care and early education programs is the use of self-administered time logs completed on a real time basis (rather than retrospectively).² Exhibit 2 is an example of a self-administered time log suitable for use in a child care or early education program. Each day, each person working in the program completes a time log on a real-time basis by drawing a vertical line from the start time to the end time of each activity that they are engaged in over the course of the day.³ Total daily staff time in each activity is simply the sum of the number of 15-minute intervals spent by all staff the each activity.⁴ Issues involved with the use of self-administered time-logs are : a) the training necessary for staff to accurately complete the logs; b) the number of days/weeks for which time logs need to be completed to obtain a reliable estimate of the proportion of total staff time or cost devoted to each activity.

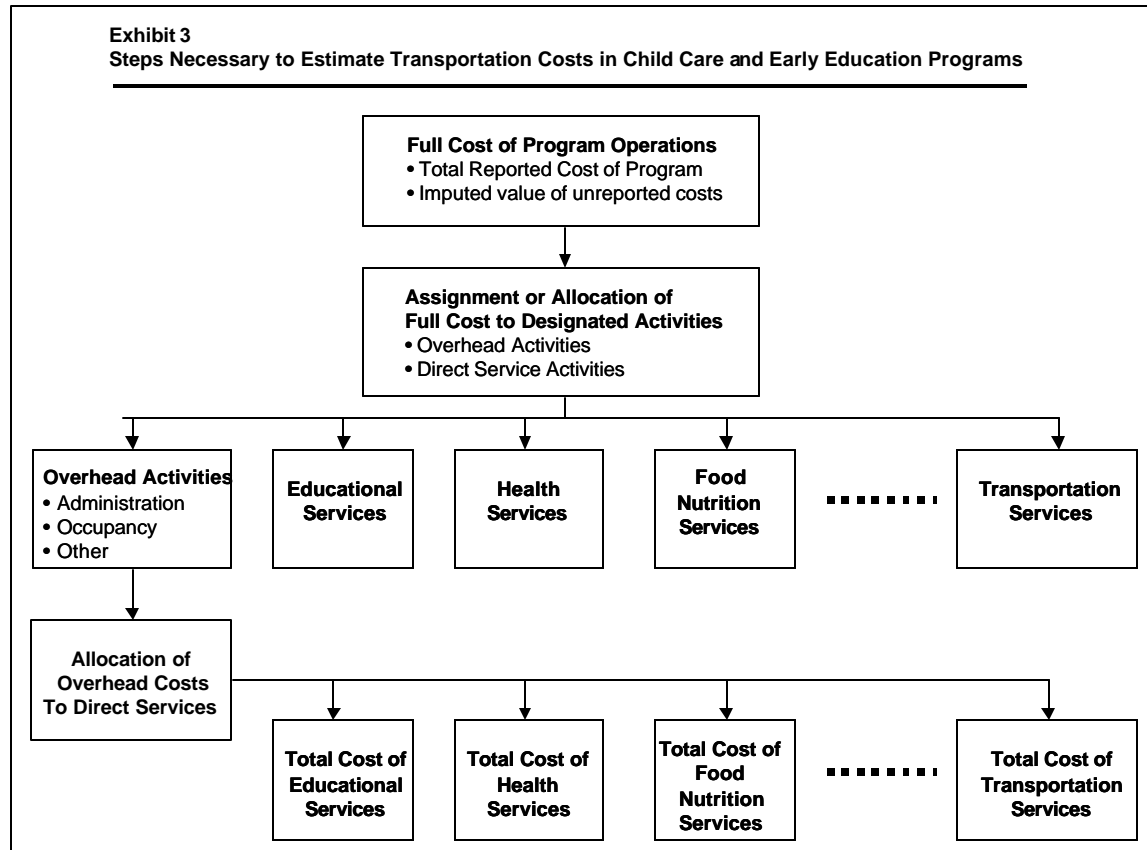
² Other methods include: a) retrospectively completed self-administered time logs; b) random moment sampling; and c) retrospective estimates of the proportion of time typically spent in each activity.

³ Use of staff titles or job descriptions is an inadequate method of allocating staff time or cost across activities. Staff in child care and early child care programs often work at a variety of activities regardless of titles.

⁴ If the allocation is to be based on the proportion of staff costs in each activity, the each person’s time is monetized by multiplying the total daily time spent in an activity by the hourly wage rate, the summing the cost of each person across all staff.

Putting it All Together

Exhibit 3 summarizes the process of estimating transportation costs (or the cost of other direct services) in a child care or early education program.



Step 1: Estimate the full cost of program operations.

Step 2: Distribute the full cost of program operations to overhead and direct service activities. This distribution is made through a combination of direct assignment and allocation based on a decision rule that has face validity (usually the proportion of total staff time or total staff costs).

Step 3: Allocate overhead costs across the direct service activities. This process usually involves creating separate overhead pools (e.g., administration and occupancy). A separate algorithm may then be used to allocate each overhead pool across each of the direct service activities. For example, occupancy costs may be allocated in proportion to the amount of space used by each activity, while administrative costs may be allocated in proportion to staff costs (or staff time) accounted for by each activity. Again, while there are no hard and fast rules for this allocation, it is essential that the algorithms used to allocate the cost of each overhead pool have face validity.

REFERENCES

Shillinglaw , G. & Meyer, P.E. (1983). Accounting: A managerial approach. Homewood, IL:
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