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Costs of Primary Health Services in Ecuador: Guidelines
for Data Collection, Processing and Summarizations

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Preface

This draft set of guidelines for data collection, processing and summarization is in preparation for a study of the costs of primary health services in Ecuador which, in turn, is a component of the USAID-financed project, Health Care Financing in Latin America and the Caribbean being managed by the State University of New York at Stony Brook. The Ecuador study is outlined in a report by Luis Carlos Gomez, Luis Asis-Beirute, Oswaldo Egas and Robert L. Robertson entitled "Proposal/Scope of Work for a Country Study: Costs of Primary Health Services in Ecuador" (April 3, 1986).

TABLE OF CONTENTS

I. INTRODUCTION

- A. Objectives of Study
- B. Basic Definitions
- C. Scope of the Study
- D. Selection of Cases for Study
- E. Interpretation of Results
- F. Flexibility of Guidelines

II. GENERAL RULES FOR IDENTIFYING AND COLLECTING DATA

III. DESCRIPTIVE INFORMATION REQUIRED

- A. Providers of Care and Their Services
- B. Populations Targeted for Service or Actually Served
- C. Certain National Economic Variables

IV. SERVICE VOLUME (QUANTITY) DATA REQUIRED

V. RESOURCE INPUT (COST) DATA REQUIRED

- A. Multiple Levels of Inputs
- B. Allocations of Costs to Final Services
- C. Contributed Inputs
- D. Recurrent versus Non-recurrent Inputs
- E. Annual Values of Non-recurrent Inputs
- F. Details on Costs of Each Category of Input
 - 1. Personnel ("Personal")
 - 2. Medical Supplies ("Elementos Medicos")
 - 3. Other Supplies ("Otros Materiales e Insumos")
 - 4. Equipment ("Equipo")
 - 5. Transportation and Travel ("Transporte")

(Section "F" is continued on next page)

V. RESOURCE INPUT COST DATA REQUIRED (Continued)

F. Details on Costs of Each Category of Input (Continued)

5. Buildings ("Edificios")
7. Training ("Adiestramiento" or "Formacion")
8. Publicity and Promotion ("Promocion y Divulgacion")
9. Others ("Otros")

VI. RESULTS -- MEASURES AND TABULATIONS

A. Cost Measures

1. Total Cost
2. Average Cost
3. Marginal Cost
4. Cost per Fully Immunized Child

B. Tabulations

APPENDIX A -- FORMS FOR THE COLLECTION OF DATA AND SOME COMPUTATIONS

APPENDIX B -- TABLES FOR THE PRESENTATION OF STUDY RESULTS

I. INTRODUCTION

A. Objectives of Study

The proposed study has several objectives. In summary, they are the following:

- (1) To estimate recent total and unit costs, divided by type of resource input, for every type of ambulatory service or activity among the primary health services provided by selected institutions or delivery units of several sub-sectors in Ecuador.
(Note: A future stage of work -- beyond the scope of this project -- might cover costs of secondary and tertiary care if such a study is later desired in Ecuador.);
- (2) To compare costs and their determinants for similar services among the sub-sectors: public (Ministry of Health), social security (IESS), and private community-based organizations;
- (3) To develop (a) a bibliographic and documentary data base in Ecuador and (b) a detailed methodology for cost estimation and interpretation adaptable to studies of primary health care throughout the region.

B. Basic Definitions

"Cost" is the monetary value, expressed in sucres or dollars or some other currency unit, of all resources -- personnel, transportation, equipment, and the like -- used to produce (deliver) a service. Resources contributed or offered at low, subsidized prices must be included in the components of cost. Costs are divided between "recurrent" and "non-recurrent" ("capital") ones, as explained below.

"Output" is the product of an organization that delivers medical care or other services. At a practical level, it refers to the service actually provided, counted in customary physical units, such as number of office consultations.

"Effects" are the ultimate result of providing medical care, for example, outcomes such as improvements in health status. Estimates of effects are needed for conducting "cost-effectiveness analysis," which is beyond the scope of this cost study due to the impossibility of measuring outcomes during a limited time for studying.

C. Scope of the Study

The study covers all three sub-sectors of health in Ecuador, as stated above. Several institutions or delivery units -- all or most of those providing ambulatory care outside of hospitals -- from each sub-sector will be selected as cases for analysis. (To illustrate, for the public sub-sector, they will include "sub-centros" and possibly "puesto de Salud" but not any "centro de salud hospital.") The cases for this study will be chosen from one to two provinces, possibly covering both "costa" and "sierra" areas.

Costs will be estimated for as many specific types of primary health services as can be studied for the chosen institutions. Cost components or categories of inputs, such as personnel and equipment, will be specified for each type of service. They will cover both recurrent and non-recurrent inputs. In all cases, a recent year will serve as the study period.

Cost measures will stress unit costs. Thus, the average cost of each type of service covered will be computed. If any incremental ("marginal") cost can be estimated, even as predicted approximate values in case of future expansion, they also will be included in the results. Per capita costs are not expected to be covered, as their estimation depends on population denominators that are not likely to be available, especially at the level of the specific institution. Certain total costs will be presented for some summary purposes.

D. Selection of Cases for Study

The number and distribution of specific institutions (delivery units) for study is yet to be determined. They will be selected in a consensus decision by the entire study team as soon as possible. The economist consultant will depend heavily on the medical services consultant and the national study group when the research team reaches its decision. (Some additional considerations about the selection are indicated in the April 5 proposal.)

E. Interpretation of Results

After costs have been estimated, interpretations of the factors affecting them will be made. This will be primarily a study of the efficiency of service delivery. However, to the extent possible, without conducting any new survey of patients or households, comments will be made on the equity of the health systems studied.

These guidelines are focused on general procedures and on cost data collection and its summarization, so no guidelines to interpretation of results are offered in this document. The international consultants and key staff member of HCF/LAC will discuss interpretations with the national study group while in Ecuador. These guidelines are intended to be complementary to the recommendations made by the medical services consultant. (For example, see the document entitled "Terminos de Referencia para Estudio del Ecuador" that was prepared by Dr. Luis Asis Beirute along with his letter dated 3 de abril de 1986.)

F. Flexibility of Guidelines

It is important to realize that these draft guidelines are intended to be flexible enough to accommodate any necessary changes and adaptations for use in Ecuador. The national group will be crucial for determining the needed revisions -- of scope, collection techniques, forms used, and so forth. It is expected that cost accounting systems previously adopted or proposed and cost analyses actually conducted in Ecuador will be useful in considering changes; the economist consultant will review them when he first arrives in Ecuador or earlier if he receives any reports in the United States. A useful guide to the earlier work in Ecuador already exists (Oswaldo Egas C., "Estudios de Costos Hospitalarios: Experiencia Ecuatoriana").

The key statements about this process are found in the study proposal of April 3: "These decisions will be made collaboratively by the international consultants and national (host country) counterpart investigators. . . . [They] must arrive at a consensus on these details, with any necessary modifications for this study, before data collection begins." Therefore, the final decisions on the details of work on this study will be made by all those parties, based on the document of Dr. Asis, the experience of Ecuadorian participants, and these draft guidelines.

II. GENERAL RULES FOR IDENTIFYING AND COLLECTING DATA

In addition to the introductory comments above and the detailed guidelines that are placed below (in parts "III" - "VI" plus appendices of this document), some general rules at this point might be helpful to readers. They refer to the identity or nature of some necessary data and to certain aspects of data collection. Here, they are simply listed in brief; the economist consultant can elaborate on them when necessary.

- (1) All data should refer to actual experience and not to hypothetical or projected values (except when certain future costs are predicted).
- (2) The true market values of all resource inputs -- whether fully paid for or received as subsidized costs or as free contributions -- should be estimated in order to obtain complete economic cost figures; special care must be taken to avoid biases in comparisons among sub-sectors or among specific institutions having different proportions of paid versus contributed and subsidized inputs; the cost totals for each institution should distinguish between the values of inputs actually paid for and those for which estimates (allowances) have been made.

- (3) Costs of inputs at all levels of the health delivery system (national, provincial, and local-delivery unit) should be included insofar as possible; appropriate shares of higher level costs must be allocated to the facility (delivery unit) level in cost estimation.
- (4) Where data for several institutions of a sub-sector can be collected at a higher level (for example, at the provincial or national level), collection should occur at the highest level possible in order to simplify the work.
- (5) Certain types of cost data will need to be collected at more than one level -- for example national Ministry of Health personnel and some transportation costs (collected nationally) will be supplemented by data on local personnel and other transportation (obtained at the local institution); here, too, biases due to different proportions of national or provincial and local inputs must be avoided (through complete data collection).
- (6) It will be useful for both data collection and reporting if the national study group prepares and maintains a large, detailed table that identifies the specific sources of information on each important element of data: cost components (at each level), service volumes, and so forth.

- (7) Because this is a supply-oriented study (focused on providers' costs) and not a demand-oriented one (focused on patients'), it will not include information collected from patients (for example, travel and waiting time) or from households (for example, income and education levels or health problems left untreated.)

III. DESCRIPTIVE INFORMATION REQUIRED

Before final cost data can be collected, certain types of information -- both quantitative and qualitative -- must be obtained and summarized in writing. The sources of every type should be clearly indicated for documentation. The document of 3 de abril of the medical services consultant adds to the information requirements indicated below and also repeats some of these points; thus, that document and these guidelines together might provide the national study group with complete guidance for data collection. It will be obvious that much of this information will be needed before the study design is complete. Some of these data will be used for description of programs and populations served while others will be used subsequently when the cost results are interpreted.

In summary, descriptive information is required on: the providers (suppliers) of primary health care to be studied and the particular services included, as well as the specific resource inputs used to produce the services; the populations targeted for service or actually served; and certain national economic variables. The components of these types of information are briefly summarized as follows. It is worth repeating that these might overlap some of the medical services consultant's recommendations. The full study team can eliminate duplication and clarify all points when it meets together in Ecuador.

A. Providers of Care and Their Services

The following types of information should be summarized briefly but specifically (and clearly) concerning the suppliers (providers) of care to be studied:

- (1) Identity of providers:
 - (a) Sub-sector and organization (for example, public - Ministry of Health or social security - IESS or specific private group);
 - (b) Structure of administration - control for sub-sector and its institutions (including organizational charts);
 - (c) Specific institutions (for example, Ministry sub-centro "X");
 - (d) Nature of levels above local (institutional) level that provide tangible support to service delivery
- (2) Total numbers of institutions similar to the cases selected for study that exist for the whole province and nation
- (3) Geographic identity of providers -- specific province(s), "sierra" versus "costa," and similar information
- (4) Sources of financial support (including contributed resources) of each local provider (or sub-sector as a whole if known only at that level) -- identity of each source but not the monetary value of its support

The following types of information should be summarized for the primary health services delivered by each institution selected for study:

- (1) Specific types of services (for example, medical consultations or visits, immunizations, laboratory tests) -- identified specifically and in as much detail as possible; volumes (quantities) of services utilized are covered below (in part "IV")
- (2) Description of technologies of delivery of each service (types of inputs used and so forth)
- (3) Summary of all names of categories of resource inputs (for example, types of personnel, specific equipment, and buildings)
- (4) "Case mix" (distribution of service volume among specific services provided or types of cases treated) of the institution, or of all such institutions of the sub-sector if this information is available only at that level
- (5) Utilization rates, by type of service, for the population targeted for service or actually served (if they are already known from prior research)
- (6) Quality of care at the institution (if it already has been evaluated)

For the main kinds of information sought above and for the quantitative details of service volume and input use (costs), the national group must determine the extent of the time lag in obtaining the data so that the entire research team can decide on the specific year for the study period.

B. Populations Targeted for Service or Actually Served

It would be desirable to know the "target" population for each delivery unit studied, but that kind of information on the "denominator" might not be available. If not, then the population actually served by the institution -- or by the entire sub-sector in the province if local data are unavailable -- should be described (without conducting any new household or patient-based surveys) in terms of the following characteristics:

- (1) Size (number of persons and/or families)
- (2) Socio-demographic characteristics:
 - (a) Income level and/or employment status;
 - (b) Educational level;
 - (c) Family status;
 - (d) Cultural-ethnic identity
- (3) Geographic location, and environmental characteristics (such as climate) of that location
- (4) Accessibility to primary health care (in terms of information available on typical distances from institutions, provider resources available, and/or other indicators)
- (5) Immunization coverage of children (of ages less than one year and less than five years), if already known
- (6) Health status in terms of morbidity or mortality rates, if already known.

C. Certain National Economic Variables

For both descriptive and later analytic purposes, the recent values for several years of the following economic variables should be collected (probably available only at the national level):

- (1) Exchange rate (Sucre to U. S. Dollar)
- (2) Annual rate of inflation (of prices)
- (3) Interest rates on governmental and private borrowing
- (4) Level of total and per capita economic activity (in terms of GNP or GDP) and its annual rate of growth

IV. SERVICE VOLUME (QUANTITY) DATA REQUIRED

Although the principal efforts in data collection, processing, and summarization will concern the values of resource inputs and the computation of cost measures, some of the basic work will involve volumes (quantities) of services provided by the delivery units during the study period. Volume data are necessary for estimation of unit costs as well as for certain interpretations of results.

Collection efforts on volume are straightforward -- so they require few guidelines -- but they will be quite detailed. The key general requirement is to find and record the quantity of care provided for each specific type of primary health service at each institution during the study year. As noted in part "III" above, every service must be identified by name. Then, a data collection form -- to be numbered Form 1 ("Formato_1") -- should be set up for use at all units studied. The particular names of types of services, broken down into as much detail as possible, will be used in the form. Because these names are not yet known to the economist consultant, the spaces for them are left blank in the sample form in "Appendix A" ("Anexo_A") -- found near the end of these guidelines. Although the form makes no reference to totals for the province or nation, it is possible that such totals of services used also would be of interest for describing the activities under study.

Immunizations as a type of services ideally will be recorded for each variety of vaccine. A suggested form, "Form 2" ("Formato 2"), for reporting such information is offered in the appendix.

One further question of detail must be resolved here: the specific parts of the year for which volumes and costs are recorded. The answer will depend on availability of summary records and convenience of their use. (For a retrospective study like this one, the researchers will not be recording services when provided nor using specific patients' files.) If reports on service quantities already are compiled each month at every institution, the monthly figures should be entered; if the records are for quarters, then quarterly values should be used. In any case, annual (full-year) summaries for all types of services will be required for every delivery unit.

A comment on the analyses to follow the data collection is worth adding. This study does not include attempts to use quantitative data to explain the volumes of services utilized, though some general qualitative factors might be identified. Instead, the impact of quantities on cost results will be interpreted.

V. RESOURCE INPUT (COST) DATA REQUIRED

Guidelines for handling data on resource inputs and arranging them to present costs must be quite detailed, because there are many cost elements. All of these data must pertain to the year that has been selected as the study period.

First, certain general concepts and work steps should be explained. They are covered below under the following section headings: multiple levels of inputs (section "A"); allocations of costs to final services ("B"); contributed inputs ("C"); recurrent versus non-recurrent inputs ("D"); and annual values of non-recurrent inputs ("E").

After those, another section ("F") provides details on each of the categories or types of resources used in providing medical care (personnel, supplies, and so forth). A separate sub-section (within "F") is used for each such category.

A. Multiple Levels of Inputs

It already has been stated (above) that resource inputs to all levels of the health care system must be considered when costs are estimated. It is not sufficient to limit the data to figures concerning the local (institution - delivery unit) level alone.

Many of the cost categories -- which are specified in section "F" below -- will have elements to be counted at the national and regional (or provincial) levels as well as at the

local. Of course, the national study group in Ecuador will be able to identify and collect appropriate data for every level for each of the sub-sectors (public, social security, and private) whose institutions are being studied. It is not necessary to attempt to specify all of the sources of information (let alone their locations) in guidelines drafted by an external consultant. Nevertheless, the following are suggested as types of data on inputs that are among the ones possibly found most easily at a level above the local for each sub-sector:

Higher level personnel whose services in part support delivery units' activities; and the proportions of their work time used for such support

Supporting costs (approximate) for such higher level personnel, for example, expenses of their offices

Grade levels and salary schedules of all health service personnel (at any level)

Supplementary benefits provided to all personnel and the bases for estimating their values (See also section "F" on this point.)

Other higher level resource inputs, sent to lower levels, and some additional information, including (but not limited to): vaccines and their prices (including shipping charges); other supplies and their prices; equipment prices (current catalog values); building rental rate equivalents; vehicles (acquisition prices and operation and maintenance expenses);

standard allowances (per day or otherwise) for personal subsistence and related travel expenses; training costs and the estimated average useful work period of each principal kind of trainee; and publicity and promotion expenses.

No specific collection forms are shown for these types of information when obtained at supra-local levels. However, some of the ways of utilizing the data in estimating service costs are shown in the sections that follow.

Naturally, information on local level inputs will be collected primarily at that level -- through staff interviews, records reviews, observation of activities at delivery units, and other means. Any collection forms used by the study team at this level are indicated in the section ("F") that contains details of specific types of resources and are shown in Appendix "A".

B. Allocations of Costs to Final Services

The costs of resources used as inputs in the production of only one type of final service at an institution can be assigned directly to that type of service without problems. For example, the value of the time (salary and supplemental compensation) of a delivery unit health worker that is devoted completely to immunizations will be assigned as a local level cost directly to immunizations. However, many inputs are shared among several services. The cost of each of those inputs must be allocated or distributed among the types of services involved. For this process ("distribucion"), a criterion of allocation must be applied by the cost study team.

There is no single agreed-upon criterion of allocation. In fact, the choice is to some extent arbitrary. For purposes of this study, the economist consultant recommends the use of one or more relatively simple criteria -- preferably, the percentage of total direct personnel cost (inclusive of the estimated value of volunteers if any) that has been recorded for each service during the study period. For example, if the directly assigned personnel cost for immunizations at a delivery unit represents five per cent of that institution's total direct personnel cost, then five per cent of all costs of resources shared locally should be allocated to immunizations.

It is important to be consistent among institutions and among sub-sectors in the selection and application of criteria of allocation. However, it is possible that the criterion used for the distribution of shared costs of a certain category of inputs might differ from the criteria used for other categories. For example, despite the use of percentage of direct personnel cost as the criterion for allocating shared costs of personnel and probably of most other input categories, such as supplies, it would be possible to select a different criterion for others, for example: the approximate share of total kilometers or miles of vehicle use to support a specific type of service for allocating shared costs of vehicle capital value and operation and maintenance to that service; or percentage of the total work days per week or

month during which a particular service uses building space for allocating shared costs of building and associated furnishings and utilities to that service. Again, it is necessary to be consistent among all the institutions and the sub-sectors of the cost study in the application of a certain criterion to a specific category of inputs.

The examples provided above refer to shared costs at the local (institution or delivery unit) level. In addition, higher level resource inputs are used, in effect, on a shared basis to support the delivery of services at all the local units. In Ecuador, the higher levels include national and provincial ones. (Any other levels for any or all of the public, social security, and private sub-sectors will be identified by the national research group for inclusion in the study.) Allocations are required, also, for all shared inputs at these higher levels.

The estimation and recording of costs of the higher levels can be done more rapidly and approximately than at the local units, but they cannot be ignored. The criterion of allocation should be fairly simple and approximate. For example, it is possible to use as a criterion the percentage of the total salary or full personnel cost (inclusive of the estimated value of volunteers, if any) that has been recorded for each institution. For example, if a particular sub-center being studied has one per cent of the personnel cost for the entire sub-sector, then one per cent of all shared national and provincial costs (for all categories of resources) should

be allocated to that sub-center. That allocated cost, in turn, must be distributed among the sub-center's final services, probably also in proportion to direct personnel costs (as explained above). It would be possible -- though probably not worth the effort -- to use different criteria in allocating different categories of higher level shared inputs to the local units. In principle, the same decisions should be made for all three sub-sectors.

On the whole, allocations are very important but usually not complicated. In case of questions for this study, the entire research team can resolve them when meeting together in Ecuador. Likewise, if any specific working tables are required for allocations, they can be agreed upon then. It is worth emphasizing that the national study group will have a major role in the determination and application of allocational rules.

C. Contributed Inputs

It already has been stated in these guidelines that the values all resources used as inputs in the delivery of primary health care at the institutions covered by this study must be included as costs. It is necessary for data collectors and cost estimators to be complete in their work -- equally so for all sub-sectors -- but the kinds of calculations necessary are not complicated. One general clarification must be made: contributions do not refer to funds transferred to the delivery units from outside; they refer to physical ("real") resources used to produce services.

The basic guideline for estimating the cost of a contributed resource is to assign the same value to it as to similar inputs that are fully paid for by the health institution or program. For example, a visiting medical specialist whose time is given to the institution on a "free" or subsidized basis should be assigned a cost that is equivalent to his full market value. At a minimum, this would be equal to the salary plus supplemental benefits for the same work period received by a regular Ecuadorian staff member of similar qualifications. An alternative would be the cost equivalent to a foreigner's home compensation, but this high cost is probably not realistic from an Ecuadorian policy standpoint (based on the probability of replacing such a costly visitor). The question of the appropriate basis of valuation should be decided by the full study team. That decision must be applied similarly to all sub-sectors. Local volunteer health workers, if any, are subject to the same rule of inclusion: they must be counted. However, for them the best basis of valuation might be the national minimum wage. Use of that rate could provoke a debate among economists over its accuracy in contrast to the use of a "shadow price" (which takes true resource scarcity into account), but the latter approach would require a difficult analysis extending beyond the health sector so probably is not feasible.

The same principle is pertinent to all other categories of resource inputs that are given on a free or subsidized basis to delivery units. In each case -- for drugs or other supplies, land, and so forth -- a cost that is realistic for the nation, reflecting the full market value of a resource, should be included for this study.

Buildings deserve special mention at this point in the guidelines, because they often have been contributed to a program or have been constructed long before the specific institution began to function in its current form. Their current value must be assigned to costs. The method recommended for this, based on rental equivalency, is explained in section "F" below.

D. Recurrent versus Non-recurrent Inputs

Economists, accountants, and others commonly distinguish between recurrent (or operating) costs and non-recurrent (or capital) costs. "Recurrent" costs refer to the value of resource inputs that must be replenished within a year or less or that are otherwise depletable. "Non-recurrent" costs apply to resources with longer lives, sometimes extending to or beyond the end of the health program. There is an additional basis for distinguishing in practice between the two types. If an input has a unit value that is small, it is not worth going through the cost estimation process for it (explained in section "E"), even if it lasts for many years. A practical approximation is to regard any such input a recurrent if it has a value of less than the equivalent of \$100

U. S. and to charge it to the cost of the year of acquisition or initial use.

The basic principle for cost estimation in this context is to assign to each time period only that period's proper share of the total value of a non-recurrent capital input. For example, the cost to be charged to the study year for the use of a piece of equipment that has a price of \$100 or more should reflect only that year's use of the item, which has an useful lifetime of several years. The manner of doing this properly is summarized in section "E."

Most inputs represent recurrent costs, but certain categories of resources raise questions as to their classification between recurrent and non-recurrent. The multi-year lives of equipment and vehicles cause them to be put into the non-recurrent class. Although buildings last for many years, their annual costs are more easily treated as recurrent ones, like rentals. The classification of training should depend on the normal useful working life of the trainee. If he can contribute (due to his training) to health service delivery for much more than a year, his training cost is non-recurrent. However, sometimes simplifications for that are sufficient, treating the category as recurrent.

Total costs also can be divided another way than that above. They are classified as either "variable " or "fixed." While this distinction has some relation to the recurrent/non-recurrent one, it basically is different. Variable costs are those that change as the volume (quantity) of service increases or decreases. Fixed costs are those that do not vary when the volume changes, at least, not within a wide range of output quantities. The variable/fixed division will prove useful for interpretation of cost study results, but it is not necessary for these guidelines, which are oriented toward data collection and summarization.

E. Annual Values of Non-recurrent Inputs

As stated above, non-recurrent inputs require special handling so that their costs for the individual study year can be estimated while the resource has a longer life. The process employed is called "annualization" or "annuitization," and is preferable to simple depreciation. It requires the following steps:

- (1) Learn, from past records or other means, the original unit value of the item (such as a piece of equipment or a vehicle); if records are lacking or the item has not really depreciated during past years, an approximation of the value in terms of current price is suggested for use (as an appreciable simplification), based on data from stores or catalogs
- (2) Estimate, from staff opinion or other national sources, the full number of years of useful life of the item (number of years starting from acquisition if original value is used or, more simply, remaining years of useful life if current price is used)
- (3) Select a rate of discount that is equivalent to the recent average rate of interest -- probably that paid on government borrowing or by low-risk private corporations; in principle, when current prices of capital items are used, the discount rate should be

increased by the amount of the recent inflation rate, but that complication is not often followed in other cost studies (or in the manuals or guidelines used for them) so it can be omitted

- (4) Refer to a table of "annualization factors" (See "Form 3" [Formato 3] of Appendix "A.") and find the "present worth" (annualizing) factor ("factor del valor presente") that applies to the number of years of useful life of the capital item and to the selected discount (interest) rate; for example, in the table, a five-year life and a 15 per cent rate will yield a 3.35 (rounded) factor
- (5) Compute the annual cost of the item by dividing its value or price (from step 1) by the appropriate factor (from step 4)

F. Details on Costs of Each Category of Input

Here, detailed guidance is offered on the collection and summarization of data on the cost of each category of resource input: personnel, equipment, and so forth. Forms suggested for use in these collection activities (with some computations) are provided. As before, the economist consultant wishes to emphasize that these guidelines (including forms) are flexible and will not be considered final until the entire study team has discussed and agreed on them. Naturally, the national study group will find points to question and details to add due to its experience in Ecuador.

The consultant also has some drafts of composite collection forms for possible recording of data on several categories of resources at certain levels. Those forms are not included in these guidelines but can be provided later if needed.

Each category of input -- based on a classification of resources that appears to the consultant to be convenient -- is covered in a separate sub-section ("1," "2," etc.) below.

1. Personnel ("Personal"):

a. Basic Salary or Wage ("Sueldo") --

This is the most important cost component of most institutions and programs. Its data can be derived by recording actual time spent at work in the health program by each type of personnel or by using time assigned (based on the assumption that the assigned hours and days really are

worked). The preferable measure is the time actually spent -- which can be used to estimate not only costs but also staff productivity (output per unit of labor input) -- but either will suffice so long as the following requirements are met: (a) every sub-sector's institutions must be treated similarly; and (b) all volunteers' times must be counted and valued at reasonable compensation rates determined by the study team.

Obviously the basic time spent (or assigned) and the corresponding salary or wage rate must be recorded for each staff member, classified by type of personnel ("medico," "auxiliar," "vacunador," "chofer," etc.). Where a staff member's work is limited to one particular type of service (grouped by type as in Formato 1), that information should be shown. "Form 4" ("Formato 4") provides a tentative design for recording such data; it probably will need to be revised after discussion by the study team to provide specific information for Ecuador. Presumably, the basic source of data on numbers of personnel will be the local delivery unit -- supplemented by records from higher levels. In some sub-sectors (the public one, at least), a national or provincial personnel register should be the basis for salaries or wage rates for all types of personnel

b. Supplemental Compensation ("Prestaciones") --

In addition to the basic salary or wage, the cost of personnel includes the value of supplemental compensation, such as pensions, vacations, insurance or social security contributions (of the employer), and housing allowances or subsidized housing. These values can be estimated by any method that the study team considers to be reasonable so long as the same method is used for a particular benefit for every sub-sector that offers the benefit or compensation to its employees. For purposes of computing costs, the full value of all such compensation should be estimated as a percentage of the basic salary or wage rate. Space to enter that percentage for each institution is found in Form 4.

Estimation methods will be discussed and decided upon by the study team. Here, only two illustrative approximations are offered for consideration if more refined data are not available.

The value of pensions and other retirement allowances, as a percentage of basic salaries (and wages), can be approximated by the following computation:

$$\frac{\text{Total Annual Pension and Retirement Benefits/}}{\text{Total Annual Basic Salaries}}$$

This can be based on totals for all health personnel of the entire sub-sector or province, assuming that the employees who actually provide the services covered by this case study receive at least roughly average benefits.

The value of subsidized housing (if housing is provided to certain employees of the institution at less than market rental expense), as a percentage of basic salaries, can be approximated by the following computation (using hypothetical figures):

Employee's subsidy (Market value - Rent paid)
is = (approx.) twice the Rent paid

Rent paid = (approx.) 20% of Basic Salary

Only 25%, or one-fourth, of all employees
receive subsidized housing

Therefore, the average value of the subsidy is
= $2 \times 20\% \times 1/4 = 10\%$ of Salary

When values of all kinds of supplemental compensation (benefits) have been estimated, their percentages must be summed to obtain the full percentage used in Form 4 and in related computations of personnel costs.

2. Medical Supplies ("Elementos Medicos"):

Certain basic guidelines for this category first must be stated. Medical supplies should be sub-divided for cost estimation purposes into two sub-categories: vaccines and others. If possible, reasonably careful computation of the total cost of all vaccines should be included, while rough estimates of the costs of others -- whose total is not likely to be large -- will suffice. Gifts as well as purchased supplies must be assigned costs. The dividing line between other supplies and equipment is \$100 U. S. (equivalent) per unit. Any input with a value of less than \$100 should be classified with supplies. Medical-type supplies (drugs and so

forth) are included in this category, while all other supplies are included in category "3" below. For all such resource inputs, the values of the quantities actually used (consumed) during the study period are pertinent to costs, but it might be necessary to approximate those by quantities received during the period, if the flow of supplies is fairly steady, in order to keep the research simple. In case of question, accurate figures on inputs used will be more important for vaccines than for other supplies.

a. Vaccines ("Vacunas") --

The above guidelines apply to vaccines as well as to other supplies. Another guideline is that vaccine costs should include the value of wastage, which might be relatively large in some institutions. In order to place values on vaccines, standard prices should be used in the study, based on the price list of the principal supplier of vaccines (PAHO or UNICEF or another organization). A standard charge (probably a percentage increase) for shipping (international transportation), should be included. For recording the use and cost of vaccines, "Form 5" ("Formato_5") can be used.

b. Others ("Otros") --

Other medical supplies should be treated like vaccines except that more aggregative and approximate quantities probably can be used in order to estimate costs. If a detailed record of local level medical supplies is required, Form 5 can be adapted for that purpose. (No new form is provided in the appendix.) If certain medicines are used only for one type of service, their costs should be assigned directly to that service. It is worth repeating that this sub-category of costs will not be large in comparison to the total; therefore, relatively little effort in the study should be devoted to it unless unusually expensive medicines are provided.

3. Other Supplies ("Otros Materiales e Insumos"):

The general guidelines stated above for medical supplies apply also to this category of resource inputs. Among their principal points are the dividing line between supplies and equipment. It should be repeated that a piece of small equipment (with unit value of less than \$100 U. S.) is treated as an expendable supply in order to keep the work simple.

After approximate counts are made of supplies used during the study period, standard prices from a catalog or central record of the sub-sector involved can be applied to calculate costs. No new form appears to be needed for this work; a simple worksheet for this small category of costs should be set up and maintained.

4. Equipment ("Equipo"):

Equipment is the first non-recurrent (capital) cost category covered in this section. The guidelines for classifying it and for estimating its value already have been presented, but they are repeated here with a suggested form.

The first relevant guideline is the use of the \$100 dividing line; any item with a price of \$100 U. S. equivalent or more is to be treated as equipment. (Vehicles will be treated similarly, but are covered separately below.)

In section "E" above, the steps required for estimating the annual cost of each item of equipment (or group of identical items) are stated; they should be re-read completely as guidelines. In summary, they are:

- (1) Record the original (or current) unit value (price) of each item;
- (2) Estimate its useful life in years;
- (3) Select a rate of discount;
- (4) Use the table of Form 3 to find the "present worth" (annualizing) factor;
- (5) Compute the annual cost by dividing the step 1 value by the step 4 factor.

"Form 6" ("Formato 6") is provided for the recording of these data and the computation of annual costs. No specific types of equipment yet are listed in the table, but the Ecuadorian study group can add the names of common types before beginning to fill in the form. The same form should be used also for the non-recurrent cost of: (a) vehicles (See sub-section "5" below.); and (b) large items of furniture unless built into the building (See "6" below.).

5. Transportation and Travel ("Transporte"):

This category has three separate portions to cover three distinct sub-categories of costs of transportation and travel. When the sub-categories' costs are estimated separately, they should be recorded separately in the tables of results.

a. Vehicles ("Vehiculos") --

The capital value (non-recurrent cost) of vehicles should be estimated in exactly the same way as equipment. Form 6 -- explained in the previous sub-section -- is designed to be used for vehicles as well as equipment.

It is possible to apply an alternative method of cost estimation for vehicles. If they are rented or treated as though they were rented, their cost may be considered to be recurrent and valued at current rental rates. If this alternative approach is adopted, it should be applied to the vehicles of all institutions in all three sub-sectors in order to be consistent.

6. Operation and Maintenance of Vehicles ("Operacion y Mantenimiento") --

Operating costs of vehicles, inclusive of periodic maintenance, are recurrent costs for a health service institution or program. They can be measured quite accurately if good records are kept by the delivery units and higher levels that support those units. Information on the kilometers or miles travelled by each vehicle, the uses to

which the vehicle was put, and the specific costs of running and maintaining it would be required for complete accuracy. However, it is more likely that approximations must be made. For example, the allocation of vehicle use among the services of an institution might be accomplished only roughly in terms of approximate shares of time or of distance of use for each purpose. Costs of operating and maintaining each vehicle or type of vehicle might be estimated by using average expenses per kilometer or mile (or even just per year) -- obtained from central motor pool records or other specialized sources.

Obviously, the study team must settle upon the appropriate methods to use in Ecuador, based on available information. A collection form can be designed later by the team to supplement these guidelines after those decisions have been made.

. Subsistence and Other Personal Travel Allowances
 ("Viaticos") --

For the personnel of some delivery units (local level institutions) and of certain higher levels, it is possible that allowances are paid for the costs of travel in support of the programs under study. These allowances might take several forms (for example, gross payments per day for all costs or itemized reimbursements) and might receive various names (for example in Spanish, "viaticos" or "estipendios"). In some cases, these costs will be too small to be worth estimating. In others, they will be worth measuring carefully. It is not likely that they will represent a large sum unless a special mass campaign is conducted during the study period.

A form can be designed later by the study team for recording such costs if they are considered to be large enough to be worth including.

6. Buildings ("Edificios"):

The space used for health service delivery (and for supporting activities at higher levels) must be assigned a value as part of cost estimation. Although complex methods of valuation of the use of buildings have been suggested in some cost accounting manuals, a relatively simple approximation will suffice. In summary, the equivalent of a current rental ("arrendamiento") rate for space in the same location should be applied to the buildings of health institutions in order to estimate their space costs. In effect, building use is considered to be a recurrent cost; this approach avoids difficult issues (such as original valuation) and data collection that would be required if treating buildings as capital resources.

The rental equivalency to be used for costs will vary by location and by amenities of buildings (air conditioning, carpeting, built-in furnishings, and so forth). It is expected that simple rental values in terms of Sucres per square meter or foot can be learned quickly from real estate representatives or other specialists.

It will be necessary, of course, to measure the building areas used and to assign them insofar as possible to specific services. Where areas are shared, reasonable methods of allocating their costs among services can be selected (as

The costs of buildings for health service delivery include the use of utilities, such as electricity and water, and of minor repair services. If their values are not included in the rental rates, they should, in principle, be added to the costs of each building. However, in practice, utility and repair costs usually are not large in comparison with others, so they can be approximated rapidly and roughly (or even ignored) in the study. Naturally, the same methods should be used for all sub-sectors to estimate the costs of their buildings.

It is not necessary yet to suggest a specific form for use in the inventory of space and the estimation of its costs. The study team can design it later, based on specific needs in Ecuador.

7. Training ("Adiestramiento" or "Formacion"):

The costs of training the personnel of health service delivery units and of higher levels belong in the total cost of a program. They should be included in this study if they can be identified equally well for all sub-sectors. (Even if not well identified or quantified, they should at least be discussed qualitatively.) Full costs of educating professionals should not be covered, though.

Quantification of training costs of local personnel probably will be feasible, especially if rough estimates are used. That is, the total cost of each training program should be estimated, even if only roughly. That cost includes not only the expenses attributable to the training program itself but also the unusual personal costs incurred by trainees (or their sponsors), such as transportation and living expenses. Of course, the number of trainees also should be recorded; then the full average (per trainee) cost can be computed by simple division of total cost by number of trainees.

A basic question is the classification of training cost as recurrent or non-recurrent. If the typical trainee uses his training at the institutions being studied for only about one year, the cost is recurrent. If the effective work period is longer, training is a non-recurrent cost that requires annualization, as explained above. Although Form 6 does not refer to training yet, it can be adapted to that use simply by entering types of trainees (of the institutions in the study) on the form substituting average cost of each type of trainee for price.

In principle, training that occurs anywhere in the world for personnel working in the Ecuadorian programs should be included in the study. In practice, a useful guideline (used also in other manuals) is to omit the costs of all training occurring outside of Ecuador due to the difficulty of estimating them. Such training should be just mentioned qualitatively.

8. Publicity and Promotion ("Promocion y Divulgacion"):

It is possible that a health program or one institution's part in it will be publicized in order to promote participation by consumers of services (and perhaps by volunteers who might help to provide the services). This is most likely to incur appreciable costs when a special campaign is conducted, such as a mass immunization campaign that occurs over a short period. Such costs must be included, even if they are incurred by one sub-sector and not by others. For example, a private community-based organization might promote greater use of its services while public and social security programs are not publicized. Activities to create or expand community health organizations (sometimes called "canalizacion" in Spanish) should be covered here, too.

All promotional efforts, through all communications media, should be assigned values that represent costs. Contributed services and materials should be included (as stated in section "C"), with approximate market values used as the basis for assuming their costs.

Naturally, the specific details of inputs for publicity and promotion will vary among programs. Therefore, no particular form for recording data on them is provided here. Data collectors can determine the appropriate form; they must be clear to show how their estimates were made in footnotes to the form or in attached sheets.

9. Others ("Otros"):

It is possible that an institution will use resource inputs in addition to the ones explained above. The costs of these inputs should be included in the study, although they are not likely to be large.

The specific nature of these other resources will depend upon the coverage of the other categories of costs. For example, many minor costs probably are covered in categories such as "Other Supplies" or "Buildings" (for example, minor maintenance and utilities). The exact classification of these costs is not important. The form required to record them can be flexible; none is offered here. The key guidelines for these costs are: (a) to include them somewhere; and (b) to estimate their values approximately and quickly.

VI. RESULTS -- MEASURES AND TABULATIONS

These guidelines are not designed to provide as much information on results of the cost study (especially the interpretations of them) as on the methods of collecting and summarizing the data needed for cost estimation. In fact, interpretive details will be left to the international consultants, assisted by the Ecuadorian study group. They will be discussed during the consultants' visits to Ecuador. If the study is extended to analysis of "productivity" (quantity of output per unit of personnel input), that matter also will be discussed there.

Here some information is provided for guidance to the national group in computing the values of certain cost measures and in tabulating the results. It is assumed that the details of creating a computerized data base of results can be determined and implemented by the national group without detailed assistance from the consultants. Each of the two basic activities (computation and tabulation) is covered quite briefly in a section below. Suggested forms of the resulting tables are provided in "Appendix B" ("Anexo B").

A. Cost Measures

Each of these measures should be computed, if possible, for each institution and in summary, for each province and sub-sector. The same year's time period is covered. In the case of certain costs particular to immunizations, such as "cost per fully immunized child," the feasibility of estimating them will depend upon information (if known) on population and its coverage by immunization. It is assumed for purposes of these guidelines that the national study group will be able to compute the costs by applying the formulas below and will tabulate the results as indicated by the tables of "Appendix B."

1. Total Cost ("Costo Total"):

This cost and those that follow should be computed for each institution as a whole (for its primary health services) and then separately for each type of primary service during the study year; similar computations will apply to the studied institutions taken together for (a) their province and (b) their sub-sector as a whole.

Each computation uses this formula:

Total Cost = The sum of all the costs of all
categories of resource inputs for the
period

2. Average Cost ("Costo Promedio"):

$$\text{Average Cost} = \text{Total cost/Quantity}$$

(For example, Average Cost of
Immunizations = Total cost of
Immunizations/No. of Doses)

3. Marginal Cost ("Costo Marginal"):

This is a measure of the incremental cost when service volume (quantity) is expanded (or contracted) by one unit. In practice in a case study of this type, it cannot be measured precisely; however, some approximations can be made for finite changes based on assumptions about the fixed or variable nature of each input category. Those assumptions can be discussed by the entire study team. Their application to the computation of marginal cost of each type of service will be made subsequently by the international consultants, so a table will be designed and completed by them rather than by the national study group. The computation is:

$$\text{Marginal Cost} = \frac{\text{Change in Total Cost}}{\text{Change in Quantity}}$$

A different aspect of "marginal cost" is the probable cost change due to expanding the productivity of personnel (for example, when a physician sees five patients instead of four per hour for the same type of service). In this case -- which also is left to the consultants' work during the interpretive phase of the study -- it will be advisable to discuss qualitatively the possible effects of such changes on the quality of care (including health status outcomes).

4. Cost per Fully Immunized Child ("Costo por Niño Completamente Vacunado"):

Cost per Fully Immunized Child
 = Average Cost per Dose (for all types of doses) X Number of doses used to fully immunize a child*

* -- For an example, assume that: the results of the study of coverage indicate that the number of children (of the appropriate age for the study) fully immunized was 100,000; and data from the cost study indicate that the number of doses applied to all children (not only those fully immunized), including wastage, was 1,000,000. Then the number of doses used to fully immunize a child was = $1,000,000 / 100,000 = 10$.

The measures of costs above provide some bases for appraising the "efficiency" of each health institution and sub-sector with respect to primary services. With the exception of cost per fully immunized child, none of these measures refers to effects of health care. The estimation of outcomes (which would be required for most analyses of "cost-effectiveness") is beyond the scope of this study.

A different kind of extension of the study involves the consideration of "equity" (as well as efficiency) of care in each institution or sub-sector. The desirability of covering at least certain aspects of equity is stated and illustrated well by Philip Musgrove (in his paper of March, 1986, "Measurement of Equity in Health"). Unfortunately, most of the indicators of equity shown by Musgrove require the use of data derived from household surveys and/or information on "denominators" that are not expected to be available in Ecuador. If immunization coverage data are available, the equity in coverage can be appraised. It is possible that certain financial measures of equity can be estimated during the cost study, but Musgrove appears to be correct when he argues: "Differences in unit costs contribute to total inequality, but their impact is small compared to the effect of differences in the likelihood of receiving treatment" (p. 10). The consultants will proceed as far as the study results permit in appraising equity.

B. Tabulations

The tables ("cuadros") recommended for presentation of the principal results of the cost study are provided in "Appendix B" ("Anexo B"). They do not require explanation in these guidelines. At this time, they are tentative and flexible. The Ecuadorian study group will be able to suggest modifications and extensions in them for the specific needs of this study. The full study team can agree upon the final versions in Ecuador.

It should be recognized that further information on additional results will be presented in other tables or different forms during the analysis. Estimates of marginal costs are a good example of such results.

ANEXO AFORMATOS PARA LA RECOPIACION DE LOS DATOSY PARA ALGUNOS CALCULOSLista de Formatos:

Formato 1: La Cantidad de Cada Tipo de los Servicios Prestados
 en Institucion [nombre] de Provincia _____
 del Sub-Sector _____ durante _____

Formato 2: La Cantidad de Cada Tipo de Vacunacion Prestada
 en Institucion _____ de Provincia _____
 del Sub-Sector _____ durante _____

Formato 3: Cuadro de Factores para la Anualizacion del Valor
 de Capital

Formato 4: Numero de Cada Tipo de Personal y la Cantidad y el Valor
 de Su Trabajo
 en Institucion _____ de Provincia _____
 del Sub-Sector _____ durante _____

Formato 5: La Cantidad y El Valor de Cada Tipo de Vacuna Usada
 en Institucion _____ de Provincia _____
 del Sub-Sector _____ durante _____

Formato 6: Informacion y Calculos de los Costos del Equipo y de
 Vehiculos
 en Institucion _____ de Provincia _____
 del Sub-Sector _____ durante _____

FORMATO 1

LA CANTIDAD DE CADA TIPO DE LOS SERVICIOS PRESTADOS

EN INSTITUCION [nombre]-----

DE PROVINCIA-----

DEL SUB-SECTOR-----

DURANTE [periodo]-----

Tipo de Servicio

Cantidad Prestada

A)

B)

C)

D)

(Etc.)

Fuente (de la Información):

FORMATO 2

LA CANTIDAD DE CADA TIPO DE VACUNACION PRESTADA

EN INSTITUCION [nombre]-----

DE PROVINCIA -----

DEL SUB-SECTOR -----

DURANTE [periodo]-----

<u>Tipo de Vacunacion</u>	<u>Cantidad (Dosis) Prestada</u>
BCG (anti-tuberculosis)	
DPT:	
Dosis 1	
Dosis 2	
Dosis 3	
Dosis 4	
Total	
Anti-polio :	
Dosis 1	
Dosis 2	
Dosis 3	
Total	
Anti-sarampion	
SUB-TOTAL	
Toxoide Tetanica:	
Dosis 1	
Dosis 2	
Dosis 3	
Total	
TOTAL	

Fuente:

FORMATO 3

CUADRO DE FACTORES PARA LA ANUALIZACION DEL VALOR DE CAPITAL
[Fuente: Organization Mundial de la Salud]

RATE 5%		RATE 7%		RATE 10%		RATE 12%		RATE 15%	
PRESENT WORTH OF AN ANNUITY FACTOR How much I received or paid annually for 3 years is worth today		PRESENT WORTH OF AN ANNUITY FACTOR How much I received or paid annually for 3 years is worth today		PRESENT WORTH OF AN ANNUITY FACTOR How much I received or paid annually for 3 years is worth today		PRESENT WORTH OF AN ANNUITY FACTOR How much I received or paid annually for 3 years is worth today		PRESENT WORTH OF AN ANNUITY FACTOR How much I received or paid annually for 3 years is worth today	
Year		Year		Year		Year		Year	
1	0.952 361	1	0.934 948	1	0.909 091	1	0.892 857	1	0.869 465
2	1.897 410	2	1.870 018	2	1.735 517	2	1.670 051	2	1.625 709
3	2.723 248	3	2.674 316	3	2.486 852	3	2.471 931	3	2.287 225
4	3.541 071	4	3.387 211	4	3.164 855	4	3.037 349	4	2.854 078
5	4.321 477	5	4.107 197	5	3.786 787	5	3.604 776	5	3.352 155
6	5.074 810	6	4.746 540	6	4.355 261	6	4.111 407	6	3.784 483
7	5.799 117	7	5.389 280	7	4.868 419	7	4.563 747	7	4.160 420
8	6.493 121	8	6.011 290	8	5.314 926	8	4.967 640	8	4.487 722
9	7.165 472	9	6.615 232	9	5.719 024	9	5.328 250	9	4.771 584
10	7.771 715	10	7.023 982	10	6.144 567	10	5.650 223	10	5.018 776
11	8.306 414	11	7.448 874	11	6.495 061	11	5.937 679	11	5.233 712
12	8.764 122	12	7.892 628	12	6.811 672	12	6.194 774	12	5.420 618
13	9.141 811	13	8.257 851	13	7.101 156	13	6.423 848	13	5.583 147
14	9.438 841	14	8.545 478	14	7.366 047	14	6.628 168	14	5.724 476
15	10.670 858	15	9.107 914	15	7.606 080	15	6.810 864	15	5.847 370
16	10.817 770	16	9.446 449	16	7.823 709	16	6.973 086	16	5.944 234
17	11.274 066	17	9.783 223	17	8.021 553	17	7.119 630	17	6.047 171
18	11.691 511	18	10.049 087	18	8.201 412	18	7.249 670	18	6.127 976
19	12.106 120	19	10.235 575	19	8.364 920	19	7.365 737	19	6.198 211
20	12.467 210	20	10.344 014	20	8.513 544	20	7.467 444	20	6.259 121
21	12.781 114	21	10.425 527	21	8.648 014	21	7.547 073	21	6.312 482
22	13.101 093	22	11.061 240	22	8.771 540	22	7.644 646	22	6.358 063
23	13.400 574	23	11.272 187	23	8.883 218	23	7.718 474	23	6.398 837
24	13.708 642	24	11.467 234	24	8.984 744	24	7.784 318	24	6.433 771
25	14.002 915	25	11.653 283	25	9.077 041	25	7.843 137	25	6.464 149
26	14.315 105	26	11.825 275	26	9.160 945	26	7.895 620	26	6.490 564
27	14.641 104	27	11.980 219	27	9.237 223	27	7.941 164	27	6.513 714
28	14.980 127	28	12.137 111	28	9.306 567	28	7.984 423	28	6.533 508
29	15.341 074	29	12.277 274	29	9.369 646	29	8.021 881	29	6.550 877
30	15.722 451	30	12.407 181	30	9.426 914	30	8.055 184	30	6.565 940
31	15.972 811	31	12.531 814	31	9.479 013	31	8.084 180	31	6.579 113
32	16.202 672	32	12.640 555	32	9.526 776	32	8.111 574	32	6.590 431
33	16.402 549	33	12.743 290	33	9.569 432	33	8.135 712	33	6.600 451
34	16.572 004	34	12.854 079	34	9.608 575	34	8.156 614	34	6.609 079
35	16.774 194	35	12.967 872	35	9.644 109	35	8.175 104	35	6.616 107
36	16.946 852	36	13.075 208	36	9.676 508	36	8.192 414	36	6.623 137
37	17.111 287	37	13.177 017	37	9.705 917	37	8.207 513	37	6.628 815
38	17.267 819	38	13.191 473	38	9.732 681	38	8.220 923	38	6.633 752
39	17.417 041	39	13.204 728	39	9.757 058	39	8.233 070	39	6.638 045
40	17.559 086	40	13.217 702	40	9.779 051	40	8.243 717	40	6.641 778
41	17.704 368	41	13.229 120	41	9.799 177	41	8.253 372	41	6.645 025
42	17.842 219	42	13.232 449	42	9.817 327	42	8.261 739	42	6.647 848
43	17.945 812	43	13.246 957	43	9.833 048	43	8.269 589	43	6.650 372
44	17.082 773	44	13.255 879	44	9.844 089	44	8.276 418	44	6.652 437
45	17.774 070	45	13.265 922	45	9.852 878	45	8.282 916	45	6.654 293
46	17.867 076	46	13.270 120	46	9.857 280	46	8.287 961	46	6.655 907
47	17.941 016	47	13.271 674	47	9.859 718	47	8.292 412	47	6.657 310
48	18.017 178	48	13.273 474	48	9.861 113	48	8.296 173	48	6.658 571
49	18.148 721	49	13.275 711	49	9.861 296	49	8.299 078	49	6.659 712
50	18.245 024	50	13.278 166	50	9.861 814	50	8.301 478	50	6.660 815

FORMATO 4

NÚMERO DE CADA TIPO DE PERSONAL Y LA CANTIDAD Y EL VALOR DEL SU TRABAJO

EN INSTITUTION _____

DE PROVINCIA _____

DEL SUB-SECTOR _____

DURANTE _____

<u>Tipo (Titulo)</u> <u>de Personal</u>	<u>Numero de</u> <u>Personas</u> <u>del Tipo</u>	<u>Grado</u> <u>de</u> <u>Sueldo</u>	<u>Cantidad*</u> <u>(Horas o</u> <u>Dias o Meses)</u> <u>del Trabajo</u>	<u>Sueldo</u> <u>(por hora</u> <u>o Dia</u> <u>o Mes)</u>	<u>Porcentaje</u> <u>Adicional</u> <u>para las</u> <u>Prestaciones</u>	<u>Tipo de</u> <u>Servicio</u> <u>Prestado</u> <u>(si solo</u> <u>uno)</u>	<u>Costo</u> <u>Total</u> <u>del Tipo</u> <u>de Personal</u>
--	--	--	---	--	---	--	---

A)

B)

C)

(Etc.)

* -- 'Cantidad refiere al tiempo trabajado o contratado (Indique cual por circulo.)

Fuente:

FORMATO 5

LA CANTIDAD Y EL VALOR DE CADA

TIPO DE VACUNA USADA

EN INSTITUCION _____

DE PROVINCIA _____

DEL SUB-SECTOR _____

DURANTE _____

Cantidad (en Dosis)*

<u>Tipo de Vacuna</u>	<u>Disponible al Comienzo del Periodo</u>	<u>Recibida durante el Periodo</u>	<u>Disponible al Fin del Periodo</u>	<u>Usada durante el Periodo</u>	<u>Precio (incluido de transporte)</u>	<u>Costo Total durante el Periodo</u>
BCG						
DPT						
Anti-polio						
Anti-Sarampion						
SUB-TOTAL						
Toxide Tetanica						
TOTAL						

*Cantidad es incluso de la perdida.

Fuentes

FORMATO 6

INFORMACION Y CALCULOS DE LOS COSTOS

DEL EQUIPO Y DE VEHICULOS

EN INSTITUCION _____

DE PROVINCIA _____

DEL SUB-SECTOR _____

DURANTE _____

<u>Tipo de Equipo</u> <u>o de Vehiculo</u>	<u>Numero</u> <u>(cantidad)</u> <u>del Tipo</u>	<u>Precio</u> <u>o Valor</u> <u>Unitario</u>	<u>Costo</u> <u>(Valor)</u> <u>Total</u> <u>de Todos</u>	<u>Calculo del Costo Anual</u>		
				<u>Numero de</u> <u>Anos de</u> <u>Vida Util</u>	<u>Factor</u> <u>del Valor</u> <u>Presente</u>	<u>Costo</u> <u>Annual**</u>

* -- "Equipo" refiere a algo con valor unitario (precio) de \$100 U. S. o de _____ Sucres or mas.

** -- Para cada tipo de equipo, "Costo Anual" = Costo Total/Factor del Valor Presente

Fuente:

ANEXO 8

CUADROS PARA LA PRESENTACION
DE LOS RESULTADOS DEL ESTUDIO

Lista de Cuadros:

Cuadro 1: Costos Totales: Pagados y Contribuidos
 en Institucion [numero] de Provincia _____
 del Sub-Sector _____ durante _____

Cuadro 2: Costos Totales: Por Fuente
 en Institucion _____ de Provincia _____
 del Sub-Sector _____ durante _____

Cuadro 3: Costos Promedios de los Tipos de Servicios
 en Institucion _____ de Provincia _____
 del Sub-Sector _____ durante _____

Cuadro 4: Costos Promedios de las Vacunaciones: Por Dosis
 en Institucion _____ de Provincia _____
 del Sub-Sector _____ durante _____

Cuadro 5: Costos Promedios de las Vacunaciones: Por Niño Vacunado
 en Institucion _____ de Provincia _____
 del Sub-Sector _____ durante _____

Cuadro 6: Costo por Niño Completamente Vacunado
 en Institucion _____ de Provincia _____
 del Sub-Sector _____ durante _____

CUADRO 1

COSTOS TOTALES: PAGADOS Y CONTRIBUIDOS

EN INSTITUCION _____

DE PROVINCIA _____

DEL SUB-SECTOR _____

DURANTE _____

(En Suces)

<u>Categoria de Costo</u>	<u>PAGADO</u>	<u>CONTRIBUDO</u>	<u>TOTAL</u>
Personal			
Elementos Medicos:			
Vacunas			
Otros			
Total			
Otros Materiales e Insumos			
Equipo			
Transporte:			
Vehiculos			
Operacion y Mantenimiento			
Estipendios (Viaticos)			
Total			
Edificios			
Adiestramiento			
Promocion y Divulgacion			
Otros			
<u>TOTAL</u>			

NOTA:

Cuadro incluye los costos de las vacunaciones de mujeres con IT.

Tasa promedio del cambio monetario durante el periodo de estudio:

\$1.00 U. S. = _____ Suces

Fuente (de la informacion):

CUADRO 2

COSTOS TOTALES: POR FUENTE

EN INSTITUCION _____
 DE PROVINCIA _____
 DEL SUB-SECTOR _____
 DURANTE _____

(En Suces)

Categoría de Costos	Fuente		
	Organ. Nacionales		Organ. Internac.
	Gubernamentales	No Gubernament.	(Todos)
Personal			
Elementos Medicos:			
Vacunas			
Otros			
Total			
Otros Materiales e Insumos			
Equipo			
Transporte:			
Vehiculos			
Operacion y Mantenimiento			
Estipendios (Viaticos)			
Total			
Edificios			
Adiestramiento			
Promocion y Divulgacion			
Otros			
<u>TOTAL</u>			

NOTA:

Cuadro incluye los costos de las vacunaciones de mujeres con T.T.

Detalles sobre los costos sostenidos por cada organizacion especifico se encuentran en los archivos del analisis de costos.

Fuente:

CUADRO 3

COSTOS PROMEDIOS DE LOS TIPOS DE SERVICIOS
 EN INSTITUCION -----
 DE PROVINCIA -----
 DEL SUB-SECTOR -----
 DURANTE -----

(En Suces)

<u>Tipo de Servicio</u>	<u>Costo Total</u>	<u>Cantidad Prestada</u>	<u>Costo Promedio</u>
-------------------------	--------------------	--------------------------	-----------------------

A)

B)

C)

(Etc.)

Todos

Fuente:

CUADRO 4

COSTOS PROMEDIOS DE LAS VACUNACIONES: POR DOSIS

EN INSTITUCION -----

DE PROVINCIA -----

DEL SUB-SECTOR -----

DURANTE -----

(En Suces)

<u>Tipo de Vacunacion</u>	<u>Costo Total</u>	<u>Cantidad (Dosis)</u>	<u>Costo Promedio por Dosis</u>
---------------------------	--------------------	-------------------------	-------------------------------------

BCG (Anti-Tuberculosis)

DPT

Anti-Polio

Anti-Sarampion

SUB-TOTAL

Toxoide Tetanica

TOTAL

Fuente:

CUADRO 5

COSTOS PROMEDIOS DE LAS VACUNACIONES: POR NIÑO VACUNADO

EN INSTITUCION _____
 DE PROVINCIA _____
 DEL SUB-SECTOR _____
 DURANTE _____

(En Suces)

Tipo de Vacunacion	Costo Total	Numero de Ninos Vacunados			Costo Promedio por Nino Vacunado
		Menores 1 ano 1 ano	1 ano -5 anos	Otros Total	
BCG (Anti-Tuberculosis)					
DPT					
Anti-Polio					
Anti-Sarampion					
SUB-TOTAL					
Toxide Tetanica					
TOTAL					

NOTAS:

Este Cuadro excluye los costos de las vacunaciones de mujeres con IT.
 Se usa para la medida de Costo Promedio aqui el numero "Total" de ninos.
 Cuando un nino fue vacunado durante dos o tres (o mas) dias, aqui se
 cuenta como dos o tres (o mas) ninos.

Fuente:

CUADRO 6

COSTO POR NIÑO COMPLETAMENTE VACUNADO

EN INSTITUCION _____
 DE PROVINCIA _____
 DEL SUB-SECTOR _____
 DURANTE _____

(En Suces)

Costo Promedio por Dosis
 (Todos Tipos de dosis para niños) _____

Numero de Dosis Aplicadas para Vacunar
 a un Niño Completamente _____

Costo por Niño Completamente Vacunado _____

NOTA:

Se calcula el "Costo por Niño Completamente Vacunado"
 por multiplicar los otros dos valores

Fuente:

Para "Costo Promedio por Dosis," vea Cuadro 4 de los resultados

Para Numero de Dosis Aplicadas ..., vea un calculo derivado en
 parte del analisis de la cobertura de JNV.