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ABSTRACT

Designed for health services planners and decisionmakers on the local level, this guide describes and explains a relatively low-cost short-term approach by which communities can estimate their needs for ambulatory health care services, determine the adequacy of resources to meet those needs, and understand major factors for improving ambulatory health care service delivery. The guide is one product of a demonstration study of ambulatory health care needs, resources, and priorities conducted in Boston, Massachusetts. Part One discusses the Boston study and briefly describes the basic approach presented in terms of its selection, limitations, and how it can be implemented. Part Two is a detailed description of the basic approach which involves a study comparing the actual use made of ambulatory care visits against use which would be expected from national and prepaid plan utilization experience. Explanations are provided for each of the 17 steps involved in conducting the six phases of the study. Part Three addresses things to consider in conducting the study, such as sources of information, potential problems and how to deal with them, and cost. Five appendixes are included: Data Needs and Availability Summary Chart, Listing of Tables Included in the Boston Study, Sample of Parts of Tables Used to Determine Use of Medical Services in Boston, Sample Neighborhood Profile, and Sample Scheduling and Staffing Needs and Cost Worksheet. (HD)

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A GUIDE TO ASSESSING AMBULATORY HEALTH CARE NEEDS IN YOUR COMMUNITY

by

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AAI #: 74-30F

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U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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PART ONE: PURPOSES AND USES FOR THIS GUIDE

I. WHY WAS THIS GUIDE WRITTEN

The purpose of this guide is to describe and explain a relatively low-cost, short-term approach by which communities can:

- Estimate their current needs for ambulatory health care services;
- Determine the adequacy of the resources and programs available to meet those needs; and
- Understand the major underlying factors involved in developing strategies or programs for improving ambulatory health care service delivery.

This guide is one product of a demonstration study of ambulatory health care needs, resources and priorities recently conducted in Boston, Massachusetts. It is designed for health services planners and decision-makers on the local level who are faced with sharply competing demands for limited funds, and who do not have the information readily available to make judgments about how scarce resources should be distributed.

II. HOW DOES THE APPROACH WORK?

Applying this approach involves the following key procedures:

- Estimating the volume of ambulatory health care visits [illegible] the residents of the individual neighborhoods in the community might be expected to use, based on data for similar populations from the National Health Survey and from prepaid plans;
- Determining the numbers and types of health services providers who are actually delivering care to the people in those neighborhoods;
- Counting the number of visits these providers are delivering and comparing that number to the number that might be expected to be used, according to the national and prepaid plan data;
- Developing profiles of the individual neighborhoods which describe (1) the apparent adequacy of ambulatory visits in each neighborhood, and (2) the effects of certain factors (such as population characteristics, health status, and facility location) which might be expected to influence the use of these visits.
- Testing and expanding on the statistical information thus developed by gathering information on the perceptions of neighborhood residents and others knowledgeable about the community.
- Integrating statistical information and community perceptions into a single document which provides (1) revised neighborhood profiles, (2) findings on a city-wide basis concerning resource adequacy, problem areas and major issues, and (3) suggested strategies for addressing the problem areas.

III. WHY WAS THIS APPROACH SELECTED?

This approach was selected because it appeared to be capable of pulling together available data in a form usable by decision-makers, within a time frame suited to the pressures of the decision-making process. It is assumed that communities interested in this approach will want something more than feelings and perceptions about what is happening, but something less than a long-term, highly sophisticated and expensive study.

For some time, studies of this type have been resisted or avoided by many communities. In part, this avoidance reflects the thorny problem of defining and measuring "needs" for ambulatory health care, particularly within the limitations of available research methods and existing data. In general, there have been two reactions to this problem. One is to say that the needs for ambulatory health services are obvious, and that lack of data is an excuse to avoid taking action to meet them. On the other hand, a large and influential school of thought in health planning holds that a study of this type must be totally definitive, and that in the absence of better information, planning efforts should be directed to improving the concepts, methods and necessary data base.

Although there is some truth in both of these views, neither is much help to decision-makers. The first provides no guidance about how to set priorities among competing demands for action. Since the methods to do the definitive study do

not yet exist, the results of the second type of thinking are not much better. Little that is usable gets done, and participants in the local decision-making process have little data to go on and no framework describing their community's health care system. Without such a framework, they have no basis on which to analyze or assess the reasonableness of proposals which are nevertheless continually being made.

IV. WHAT WAS THE BOSTON STUDY?

With these kinds of concerns in mind, the Office of the Regional Director, HEW/Region I, decided in mid-1973 to let a contract to Abt Associates to explore in Boston the feasibility of finding a middle ground between the two schools of thought described above.*

The contract required Abt Associates to develop an approach to assessing the needs, resources and priorities for ambulatory health services using existing data and working within relatively narrow financial and time constraints. The approach was to be pilot tested in Boston, and was to produce both a document usable to decision-makers in Boston and a guide that other communities facing the same problems might use.

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*Those wanting further information about the Boston study may contact either the HEW Project Officer, Mr. Thomas Sullivan, Assistant Regional Director for Health, HEW/Region I, Boston, Mass., or the Project Director, Ms. Deborah Jones, Health Care Systems Area, Abt Associates, Inc., 55 Wheeler Street, Cambridge, Mass. 02138.

The actual study was conducted over a nine-month period from July 1973 through March 1974, and followed the approach described in Section II above. Underlying the study were two basic premises: that data and community perceptions are equally important elements in the planning process, and that if the results of the study were to be used, the potential users had to be involved in the study itself. Consequently, although the Boston study was officially done for a federal client, it also had a second client in the Boston Department of Health and Hospitals, whose Commissioner and staff worked in close cooperation with the study staff and helped to determine its design and emphasis. Additionally, the study had a broad advisory group made up of people knowledgeable about the Boston community and about the health services delivery system in Boston; all of these people were also "clients" for the study.

Implementing the approach in Boston required approximately 26 professional man-months of effort and cost about $68,000. The study produced a great deal of useful information, including:

- Aggregation by neighborhood of basic census information (age, sex, race, ethnicity, income, education, employment status);
- Health status information, by neighborhood, including mortality rates (both infant and general), communicable disease rates for major reportable diseases, and immunization status of children;
- Lists of all major providers of ambulatory medical and

dental services, by type;

- Number of visits delivered by each provider;
- Estimates of patient origin for facilities providing ambulatory health services, and for private practioners;
- Listing and assessment of all ambulatory health service resources available to each neighborhood in the City;
- Description of community perceptions of need, by neighborhood and citywide;
- Analysis of the adequacy and distribution of ambulatory health care resources citywide; and
- Identification of major problem areas in the provision of ambulatory health services.

In general, the Boston study has been well received. The study is commonly recognized as having the best data available on ambulatory health services in the City, and much of the information in the report is being widely used. Concerns about the study focus primarily on the quality of existing data and fears that weak data may be improperly used in the planning process. As a result of these concerns, efforts are being undertaken in the Boston community to explore ways of improving the base data and integrating them more fully into the decision-making process. In general, the experience in Boston indicates that this approach does have reasonable potential for meeting some of the pressing information needs of those involved in the process of planning for ambulatory health services in other communities. This guide explains how it can be done.

V. WHAT ARE THE LIMITATIONS ON THE USE OF THIS APPROACH?

Those who are interested in applying this approach should recognize that it has some major limitations. Among the most important ones are:

- The available data on ambulatory health services are poor. Data on ambulatory health care resources and utilization are not collected in any systematic fashion in most communities. As a result, the data used in the calculations are rough and of widely varying quality. The results one can produce out of existing data are therefore indicative, but in need of much refinement.

- The approach is not able to address the problem of "need". No good method has been developed for defining precisely what constitutes "need" for ambulatory health services. Furthermore, no data or methods exist for determining how many visits are needed to address specific health problems in a population. This approach can address the issue of need only by collecting information on community perceptions of need. Comparing actual to expected use of services provides an indication of whether a given community's utilization patterns are at least comparable to those of other groups. However, it does not indicate whether that number of visits is sufficient or adequate to meet true needs for services.

- The approach relies on "visits" as a common denominator for the analysis. The use of visits has two problems: First, the definition of a "visit" may vary according to the service or the provider. Second, although the statistical data on volume of visits provides a general

indication of the overall level of resources available, they cannot be easily translated into information on the availability of specific services. Information on community perceptions can improve but not overcome this situation.

- The approach emphasizes comprehensiveness rather than depth. The intent of this approach is to provide an overview of the status of ambulatory health services in the community, rather than to analyze in depth particular problems or issues. Its ability to provide final answers to any given issue is therefore minimal. Its worth lies more in its ability to relate given issues and problems to each other and to the overall context of ambulatory health services delivery in the community.
- Given the limitations described above, the results of this study should not be used in isolation. It will provide a partial basis for decision-making, and will indicate where more sophisticated research needs to be done to fill gaps in available data. However, it should always be used in conjunction with other known information about health care needs, population characteristics, and the nature of the delivery system.

VI. HOW CAN THIS INFORMATION BE USED?

The data which can be collected by this approach have a variety of uses. They can also be helpful to may different kinds of people involved in the ambulatory health services planning process: providers, consumers, regulators, planners, and funders. While it is probably not possible to make a complete list of

ways the information could be used, the following are among the most likely:

- It provides a general context within which specific needs or problems can be considered. It is often difficult to know what the dimensions of a given problem are, or how it is related to other concerns or issues. This document can act as a basic part of that background, although according to the issue, further information may be needed.
- It provides general information on areas of particular need and on the constraints that may lie in the way of addressing them. It can therefore be very helpful to both providers and consumers who are involved in service planning by pointing out key issues to be explored and critical factors to consider.
- The basic data are very useful in the preparation and justification of grant or certificate or need applications. They provide a certain set of basic data that are often prepared on an ad hoc basis, as the need arises, and which may be difficult to pull together. They are also helpful to applicants and reviewers alike because they permit proposals to be analyzed in a broader context--neighborhood-wide or citywide--than is usually the case.
- The document can indicate directions for research or for further exploration of issues that appear to be of significant importance in the delivery of ambulatory services.
- Finally, the document can be used as a common starting point in the negotiations and discussions that accompany the decision-making process, although it will need to be supplemented with additional information and some of its findings may need to be clarified.

III. HOW CAN THIS APPROACH BE IMPLEMENTED?

This approach can be implemented by many different types of people or groups. While certain basic research skills are needed, they do not have to be highly sophisticated. On the other hand, certain other skills are involved which go beyond those traditionally found in many research groups. In general, the skills needed to apply this approach most effectively are:

- General knowledge of the health care available in the community.
- Good contacts with people in health services. These people will be continuing sources of information, advice and support, and in some cases of particular endorsements.
- Good contacts with community residents and representatives. These people bring familiarity with the health needs of the community from a consumer perspective, and their perceptions will be a basic part of the information collected.
- Basic skills to perform the analysis. The study staff should include persons with pragmatic research skills oriented to working with poor data and making it meaningful; basic knowledge of statistics; interviewing skills for obtaining information on consumer perceptions; and access to expertise in certain areas such as health status measures, statistics or community organization. While this access will be needed only a few times throughout the study, it is very helpful in deciding how to most effectively handle specific problems.

Possible sponsors for a study based on this approach include:

- Comprehensive health planning "b" agencies
- Municipal health departments
- Groups of institutions or a single large institution
- Consumer groups with citywide functions
- Independent voluntary or research groups
- Consulting firms

Each of these groups will bring certain strengths and weaknesses to the task of sponsoring a study like this. Who is most appropriate to conduct the study in your community will depend upon the specific role played by these groups within the community, how they are viewed, and whether they are capable of drawing together the funds and resources necessary to conduct the study.

Many local CHPS have collected a great deal of data over the years, and may be better able than some other groups to establish themselves as non-partisan. Similarly, municipal health departments have a great advantage in that they have a Citywide focus, a number of strong and diverse needs for ambulatory care data and easy access to many different groups in the local health services system. But they are also responsible for allocating funds and may have difficulty gaining cooperation and data from those who see the study as a possible threat to their programs.

Groups of institutions or a single institution may represent only a portion of the community resources and may be viewed by other providers and consumers as partisan. Consumer groups also may be regarded as partisan, and may also have difficulties resulting from a lack of full-time staff members or of a research capability.

Independent voluntary or research groups and consulting firms. All have established research capabilities, and may take a somewhat objective view of the study. Voluntary and research groups in particular may also have a citywide perspective and high regard within the community. All these groups suffer a disadvantage in that they are usually not the prime users of the study, so the study's responsiveness and use may suffer. Consulting firms face an additional disadvantage in that they may not be familiar with the community, tend to have high costs, and may have a negative image among potential users of the study. However, the well organized and objective research capabilities of many of these firms are an advantage. If used, these firms should be ones located in the community, since data collection and communications will otherwise be difficult.

Depending on the complexity of the community and the scope of the data collection and analysis undertaken, the study should be able to be completed in six to ten months, for a cost ranging from $40,000 to $75,000.

The next part of this guide provides detailed information on how to conduct a study based on this approach.

PART TWO: DETAILED DESCRIPTION OF THE BASIC APPROACH

VIII. WHAT BASIC PHASES ARE INVOLVED IN CONDUCTING THE STUDY?

The basic analytical approach of this study is to compare the actual use made of ambulatory care visits against the use which would be expected from national and prepaid plan utilization experience. This information is then interpreted in light of information on population characteristics, health status, community perceptions of need, and major service patterns to develop findings on overall resource adequacy, on major issues bearing on ambulatory health services planning, and on strategies designed to address these issues. Carrying out the approach requires extensive data collection from a wide variety of sources, and the substantial participation of a large number of individuals involved in health services in the community.

The process which should be used to carry out the study is summarized on the flow chart on the following pages. As indicated on the chart, the study involves six major phases:

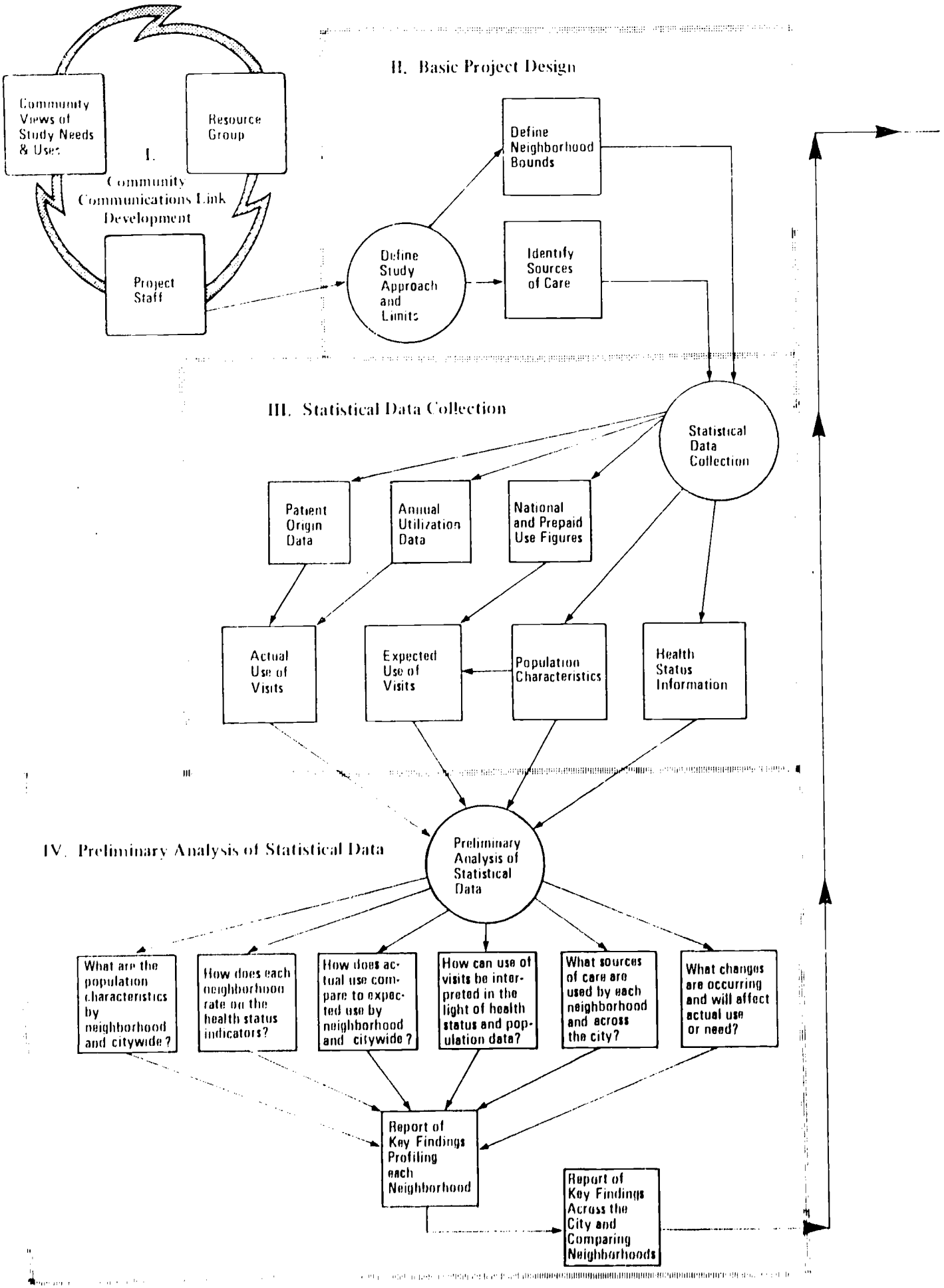
I. Community Communications Link Development

II. Basic Project Design

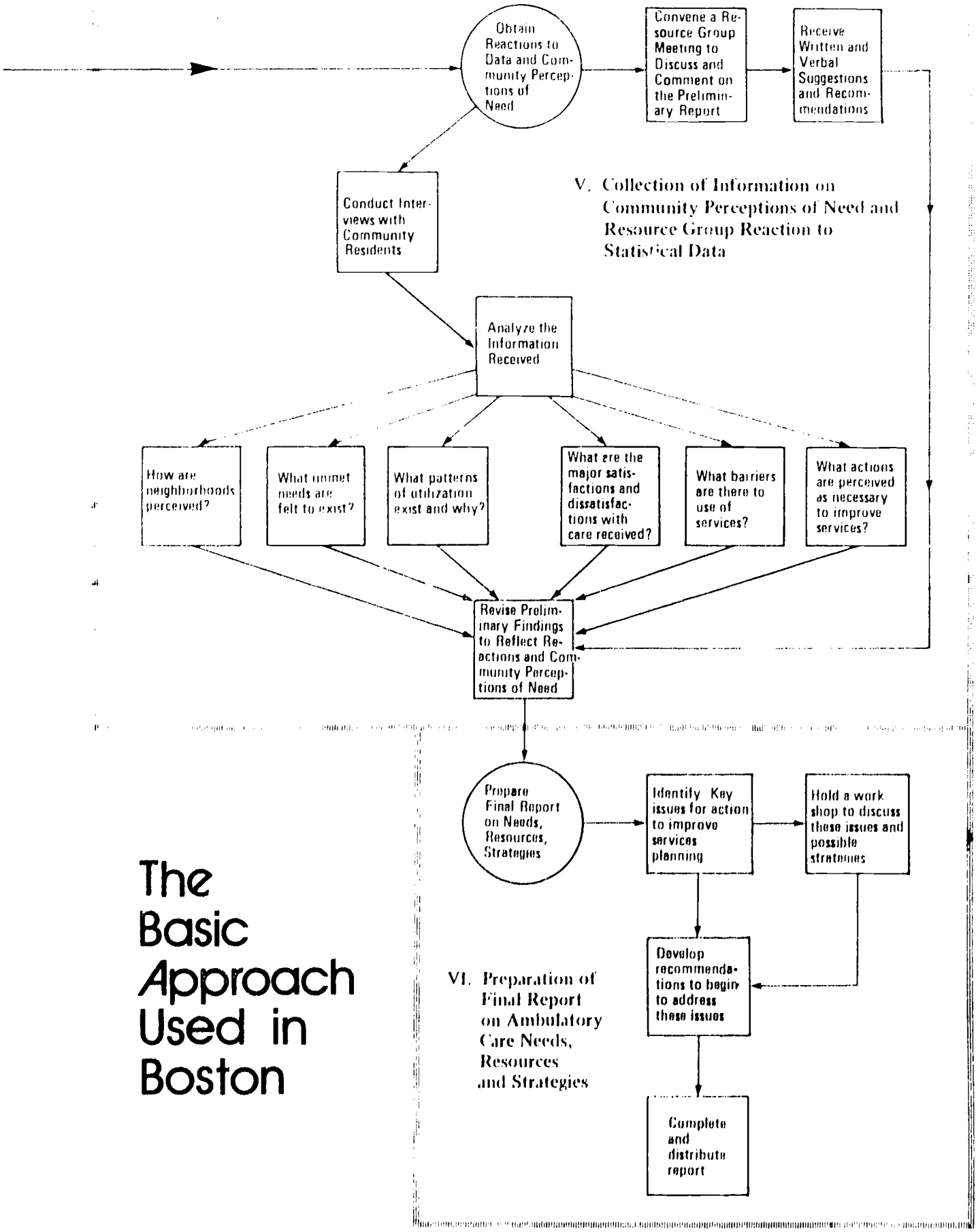
III. Statistical Data Collection

IV. Preliminary Analysis of Statistical Data

V. Resource Group Reaction to Statistical Data and Collection of Information on Community Perceptions of Need


I.
Community Communications Link Development
Community Views of Study Needs & Uses
Resource Group
Project Staff
II. Basic Project Design
Define Study Approach and Limits
Define Neighborhood Bounds
Identify Sources of Care
III. Statistical Data Collection
Statistical Data Collection
Patient Origin Data
Annual Utilization Data
National and Prepaid Use Figures
Actual Use of Visits
Expected Use of Visits
Population Characteristics
Health Status Information
IV. Preliminary Analysis of Statistical Data
Preliminary Analysis of Statistical Data
What are the population characteristics by neighborhood and citywide?
How does each neighborhood rate on the health status indicators?
How does actual use compare to expected use by neighborhood and citywide?
How can use of visits be interpreted in the light of health status and population data?
What sources of care are used by each neighborhood and across the city?
What changes are occurring and will affect actual use or need?
Report of Key Findings Profiling each Neighborhood
Report of Key Findings Across the City and Comparing Neighborhoods

The Basic Approach Used in Boston



VI. Preparation of Final Report on Ambulatory Health Services Need, Resources, and Strategies

Each of these phases plays a distinct role in the conduct of the study. The purposes of each phase of the study and the steps which are involved in each are described in more detail in the next chapter. While you may want to modify certain aspects of the study design, the following chapter presents an overview of how each step might be conducted.

IX. HOW DO WE CARRY OUT EACH PHASE OF THE STUDY?

A. Development of Links to the Community (Steps 1 and 2)

The approach to this study is unusual in that it depends heavily on the involvement of all segments of the community for its success. One of the key assumptions underlying the approach is that those who will use the results of the study must be involved in it. People from the community will participate in the design of the study, in data collection, in analysis and comment, and in developing strategies based on the results; and ways must be found to build in their participation.

The purpose of the first phase of the study is to develop the communication links and channels necessary for involving the community in the study. Basically, two steps are involved.

Step 1: Sound Out the Community About Needs and Uses for the Study. At the outset of the study, known community contacts should be tapped and new contacts should be established. Informal

discussions should be held with persons involved in ambulatory health services in your community to determine how they view the study, how they think it might be approached, and what they see as its uses. It is especially important to identify key actors and establish early working relationships with those persons who know where information can be obtained or have such information, and those for whom the study will be useful.

Step 2: Form a Resource Group. In order to assure that communications with the community continue throughout the study, it is important to set up a formal Resource Group composed of active and knowledgeable consumers and providers. Members of this group can serve as individual resources to the study by providing information on data or methodological issues; by providing endorsements, entree, and community support; by reviewing and commenting on material produced; and by serving as focal points by which comments about the study from throughout the community can be fed into the study process. From our experience, we feel that there are two major types of people appropriate to such a group: first, those individuals who represent major community data and methodological resources; and second, those key local decision makers who will be primary users of the study.

B. Basic Project Design (Steps 3-5)

Once these soundings of the community have been initiated, the study design must be filled out and tailored to respond to

the priorities and interests of those who will use it. The purpose of the second phase of the study is to refine the basic study design by setting priorities for the study, defining the limits of the study and of data collection, and making the necessary arrangements for data collection. These activities involve three major steps.

Step 3: Define Study Approach and Limits. While you may have decided to use the approach suggested in this guide, you still need to make certain basic decisions in order to implement it. These decisions relate to the scope, comprehensiveness, and level of detail you choose to include in your study. Three decisions are required:

- Definition of Geographical Area. Your choice of the area to be covered may follow natural political or geographic boundaries. However, it will have implications for the study. If the community you choose excludes certain adjacent areas with many ambulatory care resources used by your community, the impact of these sources will not be measured. At the same time, expanding the geographic scope to include all of these areas may result in a study which it too expensive to carry out.
- Definition of Ambulatory Care Visits. You may want to define ambulatory care to include all ambulatory health services, ambulatory medical and dental services only, or primary care services only. In choosing, you should remember that your definition will have to be one which allows you to use both national and local utilization

data.* In Boston, we found that defining ambulatory care to include all non-inpatient medical and dental visits best corresponded to existing data.

- Definition of Included Sources of Care. Ambulatory care is delivered in a number of different settings and by a number of different types of practitioners. The number of sources you include will depend upon the resources you have for the study and the complexity of your community. In Boston, only sources felt to provide the majority of care and to have available data in relatively usable form were included. These included private physicians and dentists, hospital outpatient departments and emergency rooms, health centers and large group practices. They excluded school health, university health programs, and industrial health units.

One thing to remember in making each of these choices is that your decisions should be based both on the level of existing data as well as on the resource you have available. You may wish to construct a matrix similar to that in Appendix A which describes which data of what types were available for Boston. You may also wish to use the forms provided in Appendix E to determine the costs of the study based on alternative models.

Step 4: Define Neighborhood Boundaries. The next thing you will want to do is to divide your community up into neighborhoods. Since needs and resources are likely to vary by neighborhood, it is useful to perform both neighborhood and

*For this reason, it is likely that you will not be able to break down the visits you include by type or by service.

community-wide analyses. In selecting appropriate subdivisions, you should consider: (1) boundaries which correspond to aggregations of census tracts so that census data can be easily used; (2) boundaries corresponding to de facto community patterns, so that data and community perceptions information will correspond and can be integrated; and (3) using existing sub-divisions so as to avoid furthering what is probably already a large number of conflicting subdivisions in your community. It is also useful to choose a subdivision used by a health agency in your community likely to be a major user of the study, or a major provider of data. The Boston study, for example, used census tract defined neighborhoods developed by the local Comprehensive Health Planning agency.

Step 5: Identify Sources of Care. Once the limits of the study have been defined, you will want to locate the names, addresses and telephone numbers of each provider you will include.

To identify private practitioners, you should obtain the most recent and complete list available for each type of practitioner you are including. Getting such lists may be difficult. Care should be taken to avoid including practitioners likely to be covered by other sources of care. For example, you may wish to exclude hospital-based physicians since most of their visits are likely to be included in hospital outpatient department statistics. In addition, you should also attempt to identify the age (or year of professional school graduation) for private

practitioners, since it will influence the number of visits delivered (see step 9). When you have a list of all private practitioners, you will then need to match the addresses of their practices to census tracts, in order to identify the neighborhoods in which they practice.

To identify other included sources of care, you should attempt to find any comprehensive listing developed by a hospital association, planning department or other similar group. Members of your Resource Group will be able to review it and make sure it is complete. It is also very helpful to use the addresses of facilities you include to plot them on a map, by neighborhood.

C. Statistical Data Collection (Steps 6-9)

The major objective--and strength--of this approach is its ability to collect in one place all available or existing data, and to organize it in a form usable to decision-makers. The statistical data collection process lies at the heart of this effort. Out of it will come a variety of statistical analyses and tables which can be used for reference by many segments of the community. In addition, the findings from the statistical data will heavily influence what is done in succeeding phases of the study.

The third phase of the study is designed to collect all the statistical data needed to compare actual to expected use of services and to interpret these in light of population characteristics and health status information. This phase will

almost certainly be the most time-consuming and frustrating of all the phases in the study; in Boston, it took four months of a nine-month study. In all, four steps are involved, each one oriented to collecting one of the four types of data needed.

Step 6: Collect Demographic Data. The purpose of collecting information on population characteristics is to provide the age and sex data needed to develop expected use figures, and to profile each neighborhood in terms of those characteristics likely to affect need for or use of services. You may also want to identify any major population changes likely to alter needs for services in the coming years.

In general, you should rely on census data since they are by far the most accurate. In addition to age and sex data, you will want to collect information by neighborhood on race, ethnicity, income, family characteristics, third-party coverage, means of transportation, and mobility. Since data aggregation is time consuming, we suggest that you focus carefully only on those population characteristics you feel are most useful in examining ambulatory care needs and resource use. In addition, we suggest that major efforts to project future population by neighborhood be avoided since methods for doing this are likely to be inaccurate. However, it would be useful to get general information on expected major population changes from a local planning agency so that these can be considered in analysis.

Step 7: Collect Health Status Data. Rough indicators of health status serve a useful purpose in the study since they

provide a measure independent of visits with which to assess the needs for services and the reasons for use of services. They are especially significant in interpreting the meaning of differences between actual and expected use of visits. For example, while a relatively unhealthy neighborhood may use more visits than expected, this might be better explained by its greater need for services than by "overutilization".

In general, measures of health status are poorly developed, especially for small areas, and few are available by neighborhood. In selecting indicators you should look for those: (1) most meaningful in reflecting health, given overall limitations; (2) least duplicative of other measures to be used for the same population group (e.g., women of child-bearing age); (3) available by neighborhood; and (4) easy to acquire, without extensive manipulation or purchase of computer tapes.

In Boston, we found that six indicators of health status were best able to meet these criteria: overall mortality (adjusted for age and sex), infant mortality, fertility rate, prenatal care use, communicable disease rates, and immunization levels of children entering school. Unfortunately no data were available to examine specifically the health of middle-aged males or of the elderly.

Step 8: Collect Expected Use Data. The purpose of expected use figures for each neighborhood to provide a starting point and a benchmark against which to examine actual use of visits.

Collecting this information involves two efforts: (a) selecting the national and prepaid utilization figures to be used; and (b) applying these figures to the age and sex groupings within your neighborhoods to determine expected use of visits.

In selecting national and prepaid utilization figures (Step 8a) you should strive to use those figures most likely to provide an accurate estimate of the visits your population would be likely to use. This means finding figures for comparable populations (e.g., northeast, urban, mixed income); and figures differentiated by age and sex so expected use figures for each neighborhood can be adjusted to reflect the age and sex composition of each. In selecting figures, it is suggested that two sets of figures be used, one national and one prepaid, to avoid the implication that a single standard of utilization exists. If you define included visits by medical and dental categories, you will need to select a set of utilization figures for each.

Once the utilization figures are selected they should be applied to the age and sex groupings within each neighborhood in your community (Step 8b). This requires making sure that your neighborhood figures are in groupings comparable to those used in the national and prepaid figures, applying the utilization rates to each group in your neighborhoods, and adding up the results to get two figures on expected use in each neighborhood. For purposes of analysis, it is useful to assume that

the two expected use figures define a range of use which might be expected.

Step 9: Collect Actual Use Data. The next step is to collect data on the actual use of visits by residents in each neighborhood, so that actual use can be compared to expected use. Collecting actual use data involves three efforts: (a) collecting annual utilization data for each source of care included in the study; (b) collecting patient origin data or estimates for the same sources; and (c) applying patient origin percentages to annual utilization figures to determine how many visits from each source residents in each neighborhood use. The procedures involved are complex and vary according to the type of source involved.

Step 9a: Collect Annual Utilization Data. Sometimes utilization data will have been accumulated by agencies such as the Department of Public Health or a hospital association, but unless such lists are available in reliable form, it may be necessary to make individual phone calls to each source of care. In collecting utilization data, you will want to obtain figures based as closely as possible on the definition of visits you are using. You should also strive to obtain data for the same year (a recent one) for all sources of care. In some cases, you may have to adjust data to include only the visits you are concerned with (e.g., to eliminate non-medical visits) or to provide annualized figures.

In the case of private practitioners, it probably will not be feasible to collect actual utilization data from each. Instead, you may have to estimate the utilization figures for practitioners in each neighborhood by applying sample utilization data based on national surveys. These are available both from the American Medical Association and the American Dental Association. In using such sample data, you should try where possible to use figures based on practitioners similar to those in your community (e.g., metropolitan, northeast), adjusted for age, and involving only ambulatory visits.

Step 9b: Collect Patient Origin Data. As in the case of utilization data, patient origin data will probably have to be collected differently for institutional sources of care and private practitioners. Unless patient origin surveys or data aggregations have been prepared for groups of institutional sources of care, it will probably be necessary to call each source to determine the best information about where their patients reside. Available patient origin data is likely to be poor and it may sometimes be necessary to derive estimates for patient locations within the specific neighborhoods in your community.

In the case of private practitioners, no patient origin information is likely to be available and a rough patient origin survey may be required. This can be done by requesting each practitioner to list the addresses of all patients seen in a typical day, although the results will be only indicative. Once responses are received, they should be coded by census

tract to show both physician location and patient neighborhood. in Boston we found that the response to the survey was facilitated by the endorsement of the local professional associations.

Step 9c: Apply Patient Origin Data to Annual Utilization Figures. Having collected annual utilization and patient origin figures for each source of care (making estimates where needed) you can now determine how many visits the residents in any neighborhood use, and also which types of sources and which facilities are used. This can be done in several ways. In Boston, we found it was best accomplished by dealing with each types of source separately, organizing the information in tabular form by neighborhood and facility, and then aggregating the figures for the individual facilities of each type. For private practitioners, the patient origin percentages for practitioners responding in each neighborhood can be applied to the annual utilization figures for practitioners in each neighborhood and aggregated to determine how many visits residents in each neighborhood receive from private practitioners throughout the community. A table similar to the one used for institutional sources of care may be used. A sample of the tables used in the Boston study for OPD medical utilization by neighborhood and overall medical utilization by type of source is provided in Appendix C.

D. Preliminary Analysis of Statistical Data (Steps 10 and 11)

By this point, you will have collected all the statistical

data included in the study: population characteristics, health status, expected use of visits, and actual use of visits. You will probably also have begun to aggregate the data into a series of statistical tables. The purpose of this phase in the study is to focus specifically on aggregating, analyzing, and interpreting the large masses of data collected. This may well be the most critical phase of the study.

From it will come:

- Basic comparative data on the volume of visits used by each neighborhood, with an analysis of its adequacy;
- Information on the general adequacy of resources in the community as a whole;
- Information on the patterns of neighborhood use of facilities, by type and by specific facility; and
- Indications of problem areas which will need to be explored further in community interviews.

In addition, the results of this preliminary analysis will be the first product of the study which can be made public and which will be subject to review by your Resource Group. It will therefore be of some political as well as analytical importance.

This phase involves two steps.

Step 10: Prepare Basic Data Tables. Since the statistical data collected provide the key for analysis at this phase in the study, the first thing you will want to do is to make sure

that the data are arranged into a format where they can readily be compared across neighborhoods. Unless you have already done this in the course of data collection, it will require much effort simply to aggregate and adjust, and to develop estimates for those instances where little data were found.

The first thing to do is to prepare a basic set of tables, which might be similar to the list of tables provided in Appendix B. In preparing a list of tables you should remember that both neighborhood and community-wide analysis will be required and that you will probably want to rank each neighborhood along a number of dimensions.

In selecting tables, it will help to identify the key questions you want to answer. Some of the most important ones are:

- What are the population characteristics of residents in each neighborhood and community-wide?
- How does each neighborhood rate on the health status indicators?
- How does actual use of visits compare with expected use, both in each neighborhood and across the community?
- How can differences between actual and expected use of visits in each neighborhood be interpreted in light of the health status and population data?
- What sources of care are used by residents in each neighborhood and across the community?
- What changes--such as population size, sources of care,

income or financing--are occurring, and how will these be likely to affect actual use of visits or the need for visits in the future?

These questions can help to define which tables you prepare and how you analyze them once they are completed.

Once the tables are prepared, you will probably want to abstract the information critical to identifying findings in each neighborhood. This can be done by preparing a format of data to be filled in for each neighborhood. At the same time, it can be useful to rank each neighborhood for each type of data and include the community-wide figure as well. Appendix D includes a sample of the statistical profile prepared for a neighborhood in Boston.

Step 11: Analyze the Data and Prepare Preliminary Report. At this point you are in a position to analyze the key findings in the data, both as these relate to neighborhoods and the community as a whole. It is probably most useful to review each neighborhood's statistical profile and prepare neighborhood findings first since this process lends itself to an identification of community-wide issues as well as of the major areas of comparison across neighborhoods. In preparing such findings, you may find it useful to develop a list of areas which are to be addressed for each neighborhood, for the community, and across neighborhoods. The absence of such an outline is likely to result in a large amount of effort being directed at interesting, but some ...ntial concerns.

The analysis you produce as a result of this process will be the first findings of the study and should be submitted for Resource Group critique and comment. For this reason, we found it useful in Boston to perform the preliminary analysis as part of the process of preparing a preliminary statistical report. We also found that this effort made it easier later to revise the findings to reflect community perceptions of need. However, in preparing the preliminary report you should be careful to stress that it is preliminary and that it will be substantially revised to reflect community perceptions and Resource Group critique.

In preparing the preliminary report, you should remember that it will be used by a variety of readers with interests ranging from specific neighborhoods to the whole community, and from general interest in the statistics to more detailed desires for information. For this reason, we felt it best to organize the report into four sections.

- Part 1: Purpose of the Study and Methodology. This part should give the user an overview of the study and what the report represents. It would include a discussion of why the study was done, what this report represents and what will follow it, how the data was obtained and analyzed, and what the limitations of the data and approach were.
- Part 2: Neighborhood Profiles. The purpose of this section is to provide the user with a summary of the data as it relates to each neighborhood. If this

is done, a map should probably be provided at the beginning of the section, with neighborhood boundaries and facility locations indicated on it. In Boston, we found it best to provide both a narrative and a statistical summary in each profile. The profiles displayed key data for the neighborhood on demographic and socioeconomic issues, health status, medical and dental sources and volume of care, and summary of use as contrasted with use expected from national and prepaid data. Providing community wide data and rankings of neighborhoods as well can assist in comparisions.*

- Part 3: Overall Findings and Issues. The purpose of this section is to provide the users with an overview of findings. You might want to include discussion of findings on a city-wide basis, summary of neighborhood comparisons, and a discussion of some of the issues which seem to be raised by the findings. This part will be very preliminary, since many findings and issues will not become clear until people have had a chance to react to the data and until the community perceptions of need are determined.

- Part 4: Detailed Tables. The purpose of this section is to provide in one place all the detailed data gathered in the study. A list of the tables included in the Boston study is provided in Appendix B.

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* A sample profile for a Boston neighborhood, as revised by the community perceptions of need, is included in Appendix D.

E. Resource Group Reaction to Statistical Information and Collection of Information on Community Perceptions of Need (Steps 12-14)

As a result of the fourth phase in the study you will have completed one of the two critical information analysis stages in the study, the statistical analysis of ambulatory care needs and resources.

The purpose of this next phase in the study is to collect the second kind of information critical to analyzing ambulatory care needs: the reactions of the community to statistical data and the perceptions of the community residents as to their needs. This information is especially necessary since statistical data will be weak and subject to diverse interpretations. In addition, the statistics will not provide some kinds of information--such as adequacy of services, appropriateness of service mix, and factors affecting use--all of which are needed to define better what actions should be taken to improve services. Thus, the information collected in this phase of the study will serve to refine and expand upon the statistical data, using Resource Group review and interviews with community representatives. Basically, three steps are involved:

Step 12: Obtaining Reactions From Resource Group Members. A Resource Group meeting should be called after participants have had a chance to review the preliminary report. The meeting should include:

- Comments on data accuracy and suggestions for revisions in the statistical data (e.g., a wrong number, omitted sources of care);
- Comments on style and organization, and suggestions for how these could be improved in the final report;
- Comments on findings and suggestions for how they could be interpreted, and;
- Comments on future efforts and suggestions for how they could be conducted.

Such comments and suggestions are very important in improving the usefulness of the final report. Not only will this review result in a series of revisions to the report, but it can also serve to initiate the process of informing community members of study results and working with them to develop strategies for action based on the study findings.

Step 13: Collect Information on Community Perceptions of Need. The community interviews are intended to provide information on areas that could not be addressed by statistical data as well as to expand upon and explain the statistical findings. The community interviews should be oriented to answering such questions as:

- How are the neighborhoods perceived?
- What unmet needs are felt to exist in each neighborhood and across the community?
- What patterns of utilization exist (e.g., low-user groups, preferences for specific types of facilities) and why?

- What are the major satisfactions and dissatisfactions with the care received?
- What barriers to the use of services exist?
- What actions are perceived as necessary to improve services?
- How accurate is the statistical information on each neighborhood?

Reactions to the draft profiles developed for each neighborhood can be solicited as well, along with suggestions for improvement or additions.

Your approach to obtaining such information will vary with the resources available to obtain it. Approaches can vary from well-structured random samples of consumers, to open-ended interviews with a few community leaders in each neighborhood. Because of resource constraints, the Boston study took the latter approach, although efforts were made to talk to a wide variety of different types of people representing the different neighborhoods.

If you choose this approach, you will want to be careful about how interviewees are chosen so that the most useful information will be obtained. (See Section IX-C). You may also want to develop an interview guide to ensure that essential points are covered. It is important to keep in mind that community perceptions are equally as important to this approach as data. Be sure that you don't get so wound up in the figures that you don't have time to devote to soliciting community views.

This can happen, and the study will be seen as less responsive for it.

Step 14: Analysis of Information on Community Perceptions of Need. This step parallels the preliminary analysis of the statistical data described above, and is the second major analysis of the study. The results of the community perceptions analysis should balance the statistical analysis, and it should be possible to integrate both of them into one general overview.

The analysis of community perceptions information will be difficult. You will have a large amount of diverse information which is not easy to summarize or aggregate. The extent to which you are able to do so will determine to a large extent the responsiveness of your findings and their acceptability to the community.

In the course of the analysis, you should keep in mind the list of questions that you addressed in your interviews, and try to organize your findings along those lines. It may be useful to prepare a matrix indicating the major issues addressed and what the findings were on these issues, by neighborhood. By this process, you will be able to aggregate and analyze the findings on how needs are perceived in each neighborhood, as well as on the community-wide patterns which seem to exist. This information should then be used in revising the preliminary report.

F. Preparation of Final Report on Ambulatory Care Needs, Resources, and Strategies (Steps 15-17)

As a result of the previous steps, you will have obtained these effect or expand upon statistical information, and obtained suggestions from Resource Group members on how the preliminary report can be revised, interpreted, and strengthened. The final phase of the study is to synthesize all this information into a final report of major findings, key issues, and recommendations for strategies and actions designed to address the issues.

This phase is critical to the study. The final report serves the basic purpose of the study by placing all the information available on ambulatory care needs and resources into one document which is organized in usable form--and prepared for distribution and application in the community. For this reason, it is very important to spend a great deal of time preparing the report, making sure that it is complete and accurate; that it presents the findings, issues, and recommendations in a clear way, and that its organization and style encourage its use. In all, the process of preparing the final report involves three steps:

Step 15: Revise Findings and Identify Issues. This step is where the basic comparison and integration of the statistical and community perceptions data takes place, and is a very important element in the strength and cohesiveness of the final report. This process of analysis and revision

will permit you to develop specific findings from the study, and to identify the major issues likely to require attention in any efforts to improve ambulatory services.

You will probably find that you need to substantially revise both the neighborhood profiles and the overall statement of findings in the preliminary report. In both cases, the statistical data and the community perceptions information should be woven together into a comprehensive discussion.

Although you will probably want to develop your own outline, we found in Boston that findings could best be addressed by grouping them into three areas;

- Overall adequacy of resources community-wide and among neighborhoods, as these are reflected in resource distribution, visit distribution, provider mix, and community perceptions of general and specific needs.
- Factors affecting the use of services and the type of care selected, including information obtained from community interviews on the influence of cost, of values and knowledge, and of systemic factors.
- System organization and relationships, covering subsystems, major networks, referral patterns, and differentiation of services across different types of facilities. These factors are likely to explain some of the findings, define the needs which exist, or limit the kinds of alternative strategies possible.

From the findings, several issues will emerge which will appear critical to improving ambulatory health services in your community. These should be identified at this point, and the major effort remaining in the study should be directed to determining what actions seem best able to address these issues both in the short and the long run.

Step 16: Identify Strategies and Recommendations for Improving Ambulatory Health Services. Many of the issues you will identify will be complex ones requiring long-term detailed efforts to resolve. As a result, you should not expect the study to develop final solutions to all, if any, of the issues identified. Instead, the study can serve to expand on what the issues are, what actions seem important in the short run and the long run in resolving them, what problems will be encountered, and what preliminary steps should be taken to begin addressing the issues.

Since improving ambulatory health services is a process which will involve many people in your community, it is important that each of these individuals (or their representatives) be involved in developing strategies for defining and resolving the issues. The approach used to provide such involvement may vary in different communities from individual consultation to Resource Group meetings, workshops of key actors, or general conferences.

The approach used in Boston to generate such involvement was to organize a workshop to discuss the meaning o

the findings and the ways in which the major issues could begin to be discussed. The Resource Group was expanded to include additional consumers, representatives of major hospitals and health centers, and persons from various community agencies and groups.

The workshop included both general sessions, directed at presenting major findings and discussing the issues raised, and smaller workgroups whose purpose was to consider in more detail the major issues raised by the study and report back to the general session.

While such an effort will by no means provide detailed solutions to issues raised by the data, it can assist in developing a series of recommendations for inclusion in the final report, and it is an excellent way to determine which larger issues may be involved in working up solutions to issues raised by the study (e.g., political, monetary, and organizational constraints). It is also important as a way for involving people with both the data and work which will be needed to resolve issues raised by them. No matter which approach is used you should be aware of the need for spending a large amount of time discussing issues and potential strategies. The issues are complex and will not lend themselves to ready solutions.

Step 17: Prepare and Distribute the Final Report. At this point you will have finished the study but will need to organize its results and recommendations into a report

which can be used by people in your community in addressing ambulatory care issues. The steps you have taken up to now will in large measure have written the report:

- From the preliminary report and reaction to it, you will have developed an outline and completed some of the sections needed. (Steps 11 and 12).
- From the preliminary analysis of findings, you will have prepared neighborhood profiles and generated an overall statement of findings and issues (Step 15).
- From the identification of strategies, you will have developed an outline of the major issues involved, the strategies needed to meet them, and an initial set of recommendations for action to address these issues. (Step 16).

However, a final effort will be needed to revise the chapters to reflect any comments on changes not yet addressed, and to make sure that the report is written in a way most likely to encourage its use. Comments from Resource Group members will be especially critical in this.

Once you have prepared your final document, you should undertake to distribute it as widely as possible. Otherwise, it will not be widely used, no matter how good it is. A good place to begin distribution is with all those who have been in any way involved with the study--Resource Group members, whose who were interviewed, those who participated in workshops or discussions, major sources of data--and with those who have been interested in the study and have requested copies. Other requests will surely follow.

PART THREE: THINGS TO CONSIDER IN CONDUCTING THE STUDY

X. WHERE CAN WE GET THE INFORMATION WE NEED TO DO THE STUDY?

Perhaps the biggest limitation on your ability to do a study like this is the amount of information you are able to find. Getting information will be a discouraging process, since information sources may be hard to locate, the information which is available may be difficult to use, and resource constraints (time and money) may prohibit the type of data collection effort that seems most desirable.

A. Rules of Thumb

In trying to determine which data are the best available, a few practical considerations may be helpful:

1. Try to find the most recent data. For example, if the census information was collected several years before your study, the local planning office or the Census Bureau may have done interim updates. In some cases, however, trade-offs may have to be made between obtaining very recent information from a few sources or comparable information from all sources which may be slightly less recent.

2. Data based on clear definitions and careful methods are to be preferred. Sources of data should be asked how the figures were collected and what definitions were used.

3. Try to identify sources of comprehensive data (e.g., information of all hospital OPDs) before you contact each

individual source. The advantages of this tactic are some possible gains in comparability of data and savings in time and money. However, if you are concerned about the definitions used or the inadequacy of such comprehensive sources, a few calls to individual sources for verification are worthwhile.

B. Sources

There are numerous possible data sources at the national, state and local levels. They collect a variety of different types of information, in various forms, at various times and for many different purposes. The following discussion is meant to direct you toward those agencies and groups which may have information you will find useful. It is intended to be neither comprehensive nor exhaustive. Agencies that exist in one community do not necessarily exist or perform the same functions in another, and they may be called by different names. In addition, there are many data collection efforts which take place on a one-time basis and while they may be available one year, they are soon outdated. A matrix which displays data sources by the type of data they may have available will be found on pages 48 and 49.

1. National Sources. The kind of data you can get from national sources, both federal and private, will probably be most useful in formulating your standards or norms for expected utilization. Although there are other sources you may want to tap, three seem to be particularly useful:

- Census Bureau. The Census is by far the best source of information on population characterisitcs. First, in order to aggregate the data easily into the neighborhood divisions you have selected, you will need the U.S. Census of Population and Housing, by census tracts. Second, the Census often does special studies for certain areas or on certain issues which may be of use to you. Finally, you will need a conversion guide to translate street addresses into census tracts. These are available either on tape or published as a directory, and the Census Bureau is one place to look for them.

- National Center for Health Statistics. The National Center performs an on-going analysis of health status and utilization in the United States through the National Health Survey. The reports from the Survey are published regularly, and provide data on the average number of physician and dentist visits per person annually, (1) by age and sex, (2) by region of the country, (3) by race and (4) by income. The Center also collects mortality and morbidity data which may be useful in formulating health status measures.

- National Professional Associations, particularly the American Medical Association and the American Dental Association. These national associations have good research departments which may be able to provide you with very useful information. In particular, they collect data on the characteristics of individual practices (e.g., weeks worked per year; volume of visits delivered, by age of practitioner). These data will probably be the best source available on the private practitioners in your community. The AMA also publishes a directory of practicing physicians. We found individual professional associations (such as the American

Board of Internal Medicine) to be less useful sources, although the Academy of Pediatrics has done some limited work on establishing norms for pediatric care.

2. State sources. State governments are a good source of data specific to your community, although it is sometimes difficult to locate the person or office which has what you need. The kind of information you are most likely to find will be vital statistics, communicable disease rates and perhaps some utilization or patient origin data for the sources of care in your community. Some places to check are:

- The State Department of Public Health, particularly the divisions of research and vital statistics. Also, in some states, some of the following offices may be included in the Department.
- The State Comprehensive Health Planning Agency ("a" agency). The "a" agency staff may have some data themselves. Also, they may have good information on other sources of data, particularly within the state hierarchy.
- Special research projects. Many states have on-going research projects such as the Federal-State-Local Cooperative Data project. These projects are often trying to resolve the same kinds of data problems you are, and may have already done certain kinds of analyses. They are also good people to ask about the quality of various kinds of sources of data.
- Rate-setting commissions or other regulatory agencies, and third-party payers. Blue Cross/Blue Shield, the welfare or Medicaid agency, and other private carriers

fall into this category. These groups may have some utilization or origin data for some facilities in your community, and may also have done some research work on levels of insurance coverage which could be useful to you.

- Professional and facility associations (e.g., hospital association, medical society), and boards of registry or licensure. Utilization and patient origin information has rarely been collected for individual providers. However, boards of registry or licensure and professional associations may prepare lists of providers in the state. It should not be surprising, however, if the lists are not up-to-date or are expensive to obtain.

3. Local or Regional Sources. The best sources of data about your community are those closest to home. Among the possible places to find data are:

- Municipal agencies. Chief among these is the local health department, which may collect both vital statistics and health status information. It is also a source of information, and possibly utilization data, for city-funded sources of ambulatory care.

  A second municipal source is the local planning or urban renewal department, which may be one of the better sources of information on expected changes in the size or nature of your community's population. It will almost certainly have useful maps. The planning department may also have access to census updates and conversion guides for use of census data, or may be able to refer you to others for such data.

  The third source is the school department. If it handles school health in your area, it may have collected

data on immunizations or the health status of children which can be useful to you.

- Comprehensive Health Planning ("b" agency) and the Regional Medical Program. CHP is potentially a good source both of demographic and health services data. It may also have done some data analyses or special studies useful to you, and is a good source of suggestions about other sources of data. RMP likewise has often funded or performed good studies of health services on the local level.

- Voluntary research groups and research teams within universities. These sources are most useful for special studies bearing on your interests. However, some of the voluntary groups (e.g., United Community Services) may also do some on-going data collection on local population or health services patterns.

- Individual facilities and providers of service. Providers are the fundamental source of data on patient origin and utilization, and should at least be able to give you estimates for such data. Many facilities are installing computerized billing and records systems, and may now be able to provide you with some good utilization, patient origin and third-party coverage data. Some may also have done outpatient origin studies on a sample basis which will be helpful to you.

- Local professional societies or organizations of facilities (e.g., Medical Society, hospital association). Local organizations may be good sources of both lists of providers and some comparative utilization data. Unfortunately, however, these organizations may keep listings only on their membership.

POTENTIAL SOURCES OF INFORMATION BY TYPE OF SOURCE*

Information Sources \ Information Types	Local Population Characteristics	Utilization Norms/Expected Utilization	Sources of Ambulatory Health Services	Utilization of Specific Facilities or Services	Patient Origin	Health Status Measures	Information on Data Quality/ Methods
NATIONAL						2	
Census Bureau	1						
NCHS		1				1	1-2
AMA		1	1	2			2
ADA		1	2	2			2
Other Professional Associations		3					3
STATE							
Health Department		2-3		2	3	1	2
Comprehensive Health Planning ("[illegible] agency)	3		2	3	2-3	2	1-2
Rate Setting Commission			2-3	2	3		3
Boards of Registry or Licensure			2-3		3		
Professional Associations			2	2	3		3
Facility Associations			1	1	2		2
Third Party Payors	3			3	3	3	
Special State Research Programs (FSL)	2	2	2	2	3	2-3	1-2

* Sources are ranked as follows: 1 = very good potential source; 2 = likely or possibly useful source; 3 = possible but unlikely source.

Information Types / Information Sources	Local Population Characteristics	Utilization Norms/Expected Utilization	Sources of Ambulatory Health Services	Utilization of Specific Facilities or Services	Patient Origin	Health Status Measures	Information on Data Quality/ Methods
LOCAL & REGIONAL							
Health Department			1	1	2	1	2
Planning or Urban Renewal Office	1		2-3				
School Department						2	
Regional Medical Program	3	2-3	2	2	2	2	2
Comprehensive Health Planning ("b" agency)	2	2	1	2	2	2	1
Voluntary research groups & university research teams	2			2-3	2-3	2-3	2
Individual Health Facilities			1	1	1	2	2
Facility Associations			1	1	1		2
Professional Associations			2	?	3		3
Other							
Telephone book			1				
Prepaid Plans		1				2	2
Other researchers	(Depends on research project)						

* Sources are ranked as follows: 1 = very good potential source; 2 = likely or possibly useful source; 3 = possible but unlikely source

4. Other. One of the most overlooked sources of information is your local telephone directory, which may have the only available listing of private practitioners. Another is prepaid plans in your community or other parts of the country whose utilization data may be useful to you in determining expected utilization for your community. Finally, there are within almost any community individuals who may be engaged in personal research or data collection. They can be very helpful to you if you can locate them. It is a good idea always to ask people you work with who might either have or be collecting data related to your interests. They will turn up in places you might never have thought to look.

XI. WHAT KINDS OF PROBLEMS WILL WE RUN INTO AND HOW CAN WE DEAL WITH THEM?

The analysis described in this guide tries to identify ambulatory health care needs and develop strategies for meeting them even though the available methods are limited, the data poor and the money to do the study in short supply. It also involves an extensive effort to involve the community in the study, something which is often avoided.

Although the approach was generally successful in Boston, a variety of problems were encountered. Their nature leads us to believe that similar problems will arise in any community attempting to conduct the study. In many ways, the success of

the study will be determined by the willingness of the persons conducting it to recognize these problems and to solve them in the most judicious manner. For this reason, we present below a summary of some of the problems which might be encountered and suggestions for how they might be handled, based on the Boston exper

A. [illegible]ical Data Problems

A major problem is that data on ambulatory health care needs, resources, and utilization are not collected in any systematic fashion in most communities. Collecting data is likely to take a long time, and is likely to involve problems of finding data, getting access to it, and using it.

Some kinds of data won't exist, either at all or in the form you desire. Unless new data are collected, this will mean that in some cases the scope of the study will be limited, and in others, data used will be weak and will have to be adjusted, manipulated, or estimated. For example, it may be impossible to get data on visits broken down by type of visit or type of provider. Because of this, it may be impossible to look at specific types of utilization (e.g., pediatric) or specific types of providers (e.g., primary care, physician). Similarly, only incomplete health status data may be available since morbidity measures are not commonly available for small areas, and mortality data may be distorted for small areas. The indicators used may not be the best, but they may be the only ones

available. Patient origin is another problem likely to arise. Institutions keep these data to different degrees and in different geographic breakdowns. It may be necessary to adjust them and make estimates for those places without such data. In the case of private physicians it may be necessary to collect origin data on a one-day survey basis, as was done in Boston. Cooperation of the local medical society will be critical in this, as will the recognition that the data obtained will be rough.

Some kinds of data may be difficult to get because of access problems. One problem is to find the right person within the institution to provide you with the data. This may take a while or require suggestions and support from those on your resource group. Another problem may be cost. Some data may have been collected but not aggregated or analyzed. Unless you can pay for computer tapes or for staff people to aggregate some data at institutions, the data may be inaccessible. A third problem can be researchers' prerogatives. Researchers analyzing data may be hesitant to provide it prior to publication of their results. Such problems can often be remedied by explaining to the person how you intend to use the data, and assuring him or her that full citation and acknowledgement of the data's source will be given. It may sometimes be necessary to provide time for the researcher to clear the text in which the data are included. A similar problem which may arise is that of bureaucratic

clearance. Some groups may have formal methods developed for approving data before release. It may take some phone calls and letters of explanation and request before certain data may be made available. Time should be allowed for such clearances.

A final data problem likely to arise is that of using the data. Since data are likely to be of widely varying quality and comparability, it is necessary to know how to accept weaknesses which can not be remedied and to adjust for those that can. In cases where no data are available, estimates may be needed.

B. Judgment Issues

How to handle data problems presents a judgment issue. In most cases, there is no single way which will be universally accepted as correct. What is required is to determine what the problem is, analyze the different ways of handling the problem, and make a choice as to which one seems best. Comfort with numbers and knowledge of how they work is almost a necessity.

One common problem is selecting which source to use when several are available. Before deciding, it is good to determine how each source collected its data and what definition was used. Opinions of accuracy should be solicited from those involved in providing, collecting, and using the data. In general, the source which is most recent or had the most specific data should be used; but sometimes choice will have to be based

on ease of access (e.g., one source providing data from 20 providers), or community acceptability.

A second common problem is deciding when to make adjustments or estimates, and how. The first thing required is a willingness to adjust or estimate data, though this may seem like "sloppiness" to some. The specific adjustments or estimates will vary with the problem. In the Boston study, several major adjustments had to be made. A few pertinent examples are listed below:

- National utilization data. Data available from the National Center for Health Statistics included telephone, office, and home visits. Utilization data in Boston excluded telephone visits. For this reason, national utilization data were adjusted to eliminate telephone visits by reducing the number of visits used by each age-sex group by the proportion of telephone visits made in the entire population.
- Patient origin data. Many health centers and a few hospitals had no ambulatory patient origin data, and could only indicate that users came from "nearby", or "across the city". In these cases, you can use techniques like the following:

  --For health centers you can draw circles around individual centers on a map at radii of one-quarter, one-half and one mile, and assume that they account for 50%, 35% and 15% of the users, respectively. Then adjust your figures on the basis of what you know about neighborhood patterns.
  --For hospitals you can use inpatient origin data, recognizing that it probably represents greater distances than outpatient use; the hospital's definition

of its own service area, if it had one; or the radius method, if you think the hospital is truly a community hospital for which such radii make sense. You may want to use emergency room origin data to reflect OPD use, or vice versa if data exists only for one.
--For hospitals which are citywide sources of care (such as a Veterans Administration facility) and for which you can only get the proportion of total visits delivered to city residents, you can distribute that number across all neighborhoods according to population density.

- Vital Statistics. Vital statistics for small areas are likely to be distorted by chance events or unavailable in detail. To overcome this, two-year averages were used for both births and deaths. Since age-adjusted local mortality data was not available, national rates were applied to the populations within each neighborhood to determine how many deaths would be expected for this age and sex population. The expected deaths were compared to the actual number occurring.
- Local utilization data. Sometimes hospital or health center utilization data was only available on a quarterly sample. This was presumed typical for the year and estimates for yearly utilization data were based on it. For private physicians, no utilization data were available, and national norms adjusted for age were used to determine how many visits each private physician could be presumed to deliver.

C. Problems in Identifying a Sample of Community Representatives

Unless you have the funds to conduct a random sample of interviews or panels with community representatives, it will be necessary to select specific representatives to interview. The

number interviewed will be limited, but should be as broadly representative as possible.

The first thing to do is to solicit suggestions from various Resource Group members. The second is to list the representatives suggested according to the neighborhoods they represent. In selecting the residents to interview you should:

- Take care to assure that all neighborhoods are covered.
- Interview representatives of any large ethnic or minority groups, or of any groups likely to have special problems (e.g., blacks, Spanish-speaking, elderly).
- Avoid interviewing only very active residents who are likely to have different perceptions from others in the neighborhood. Asking such residents to bring a less involved friend to the interview can help.
- Avoid interviewing only persons working in or involved with particular ambulatory facilities. These persons can contribute valuable information, but may have a somewhat narrow perspective on sources of care or needs.
- Allow sufficient time to arrange interviews and develop a larger list of potential interviewees than you intend to use. Contacting residents and setting up interviews takes a substantial amount of time. Some residents may not be reachable, and others may have to substitute.

In all this, flexibility is needed. After a number of interviews you may find that the extent of information you have varies across neighborhoods. Later interviews should be shifted to adjust for this.

D. Reconciling Community Perceptions with Statistical Information

The community interviews will provide information on many issues. Some of the information may confirm or dispute statistical data, some may explain statistical data, and some may provide information which was not available in the statistical data. Because the statistical data and community perceptions come from different sources and are oriented in different ways, reconciling the two may be difficult.

The best way of handling the two kinds of information is to treat them together. Each has something to say about the general issue. If you organize your report into neighborhood profiles and areas of overall findings, each of these should contain both statistical data and information on perceptions. Depending on the issue involved, statistical data will sometimes be used more than information on perceptions; other times the opposite will be true.

A problem you will probably face is disagreement between the statistical data and community perceptions. Sometimes the reasons given for community disagreement can help to reconcile these differences. Knowledge of how data was obtained can also help to reconcile differences. Other times you may have to acknowledge that the two disagree, but that each has something to say on the issue.

E. Handling Criticisms of the Study

Criticisms will be raised about the study. The best way to handle these criticisms is to point out why you think the study is useful, to accept valid criticisms, and to note the weaknesses in the other approaches suggested. For example, it could be noted that the benefit of the study is that it provides a low-cost, relatively organized and comprehensive way of looking at needs. It should be pointed out that the study is only suggestive, not conclusive; and that it will not replace the need for personal familiarity with a community. At the same time, it should be noted that more complex studies are often not financially feasible or timely, and that a widely accepted way of documenting need conclusively so that it can be measured has not yet been developed. Similarly, while community resident perceptions are most valuable and necessary, these perceptions alone make it difficult to establish relative priorities across different needs or on the extent of need among neighborhoods.

XII. HOW MUCH WILL ALL THIS COST?

The study done in Boston, using consulting rates, cost approximately $68,000, but we think it can be done less expensively in most communities. The actual cost involved, however, will vary according to the community and the study design. Worksheets to determine cost are provided in Appendix E.

A. Factors in Cost

How much the study will cost depends on certain basic things: how large and complex your community is, how broadly the study is defined, how easy it is to obtain data, how much original data collection you intend to do, and how high a level of quality you expect for the original data collection.

Costs will be greater in larger communities which contain large numbers of resources which must be identified and included. They will be greater in studies which are broadened to include a very detailed neighborhood breakdown, extensive coverage of different types of sources of care, or detailed analysis of the types of visits made. They will also be greater in communities where data collection is made difficult by the absence of previous studies analyzing utilization or patient origin across facilities, or health status by neighborhood. Costs will also be greater if you intend to collect large amounts of original data. Finally, they will be greater if you expect a high level of quality requiring longterm patient origin surveys or random samples of community residents. Trade-offs will be required between what you would like to do, and the money available to do it.

One way you can affect cost without necessarily changing the scope of your study is to choose carefully the types and and levels of staff you will need. In Boston, we found that while two fairly experienced staff members were required, much of the work could be performed by less experienced and lower paid staff.

While senior staff are needed to define the study and methods to be used, organize the work, and establish good communications within the community, more junior staff are quite capable of performing the large amounts of data identification and analysis work needed.

B. Areas of Major Expense

In determining the likely cost in your community, you should be careful not to underestimate the time and cost required to perform certain tasks. More specifically, you should be careful to allow sufficient time and money for data collection, verification, adjustment, and analysis; for expenses of duplication; and for communications within the community.

Collecting, preparing and analyzing data is likely to take much more time than you estimate. Finding the data alone may take about four months and 1.5 staff persons. Putting it into a form which can be used in analysis can take another month of 2 staff persons. Expenses for duplication are also likely to to be high. Substantial expense is likely to arise in duplicating data you need. Most people you communicate with about the study will want a copy. The study may be quite long, and you should be prepared to make many copies. Similarly, it should be recognized that substantial amounts of time will have to be spent explaining the study to persons in the community, assisting them in understanding the data, and responding to their criticisms.

Unless sufficient time is allowed, the usefulness and responsiveness of the study is likely to suffer.

C. Staff Needs for the Boston Study

The figures below indicate the number of staff days and other costs associated with the Boston study. Boston has a population of about 641,000 and a complicated delivery system involving almost 20 hospitals and over 30 health centers. The Boston study used the scope and depth described in this guide. You may wish to use these figures as a guide in developing your own by adjusting them up or down depending upon the factors previously mentioned. You should apply the salary rates of the persons you expect to fill each type of staff position.

Staff

Type	Estimated No. of Days
Project Director	108
Associate Director/Analyst	78
Other Senior Staff or Consultants*	20
Graphics Staff	13
Junior Analysts	340
Secretarial Staff	90
Total	749

Other Costs

Local Travel	$ 75
Long Distance Telephone	100
Xerox and Printing	4,500
Other Costs (e.g., supplies, written materials, maps, space for meetings, etc.)	500
Total	$5,175

* Unless staff such as statistical consultants or persons very familiar with the data or community are available in your office, you may have to pay outside persons to perform these roles.

APPENDICES

APPENDIX A

DATA NEEDS AND AVAILABILITY SUMMARY CHART

(As prepared for the Boston Study)

DATA OBJECTIVE OR IDEAL	DATA AVAILABLE	ADJUSTMENTS OR ADDED MANIPULATIONS NEEDED	ISSUES
1. POPULATION CHARACTERISTICS			
Age and sex distribution of population by neighborhood	Same, from CHP (b) agency 1970 data by neighborhood	- Must adjust age intervals to mesh with norm intervals	- What degree of age aggregation is desireable (e.g., 10 years, 20 years, etc.)
Selected descriptive population characteristics by neighborhood (e.g., income, race)	Same, from the 1970 U.S. Census, by census tract	- Must aggregate population characteristics by census tracts into neighborhoods	
2. POPULATION TRENDS			
Above, including 1960 data and data from 1971, 1972 police listing	-Boston Redevelopment Authority (BRA): New housing - by stage, location, number of units	-Must develop a formula for integration of data to develop estimates	- What factors will be considered and how sophisticated or complex should the projections be?
Birth rates, by neighborhood	-Department of Health & Hospitals (DHH) or Department of Public Health (DPH): Birth & death rates by age, census tract	-Must adjust 1960 to 1970 census tracts	
Death rates, by neighborhood	-U.S. Census Bureau, 1960	-Must develop by neighborhood	-Should projections be done at annual intervals?
Mobility	-Boston Police listing, 1971		
New housing construction	-Quality of existing housing		
Other still under consideration	-Assessed value rates		

DATA OBJECTIVE OR NEED	DATA AVAILABLE	ADJUSTMENTS OR ADDED MANIPULATIONS NEEDED	ISSUES
3. PRIMARY CARE NEEDS - MEDICAL			
Average number of physician visits needed per person per year by age and sex for primary care	- National data from National Health Survey, 1971 Average number of physician visits/person/year for the Northeast by age and sex Number of medical visits by specialty and place of visit	- Merge certain age groupings to correspond to population data - Reduce average number of visits/person/year to eliminate specialty visits as estimated from this distribution	- To reduce problem of eliminating specialties and defining those, should all ambulatory visits be included? - Should phone visits be included?
	- Prepaid Experience Data from Health Insurance Plan of N.Y. - 1970-1971 Annual physician utilization rates by age and physician specialty - for males, females, 1970 Annual physician utilization rates by place and each specialty, 1971 - Professional Forms None available	- Adjust age groupings to correspond to population figures - Divide utilization rate by 100 to obtain same measure as national data - Adjust utilization rates to omit in-hospital visits - Get population base data and obtain a total male and female utilization rate	

DATA OBJECTIVE OR IDEAL	DATA AVAILABLE	ADJUSTMENTS OR ADDED MANIPULATIONS NEEDED	ISSUES
4. PRIMARY CARE NEEDS - DENTAL			
Average number of dental visits needed per person per year by age and sex	- National Data from the National Health Survey, 1969 Number of dental visits/person/year for the Northeast, by age and sex		
	Prepaid Experience (a) Teamsters, N.Y.C., 1960's average number of dental visits/person/year by age and sex, by first and second year in program (b) Group Health Association, number of visits/person/year for maintenance care by age, sex, and category of service		- Should both the first and second year HMO experience be used? - Is it valid to use 1954 GHA data?
	Professional Norms None available		

DATA OBJECTIVE OR IDEAL	DATA AVAILABLE	ADJUSTMENTS OR ADDED MANIPULATIONS NEEDED	ISSUES
5. RESOURCES AVAILABLE OVERALL - MEDICAL			
Number of primary care private physicians available by specialty, age, neighborhood Number of visits made to OPDs by location, clinic or specialty and age and sex Number of visits made to ERs by location, urgency and age and sex Number of visits made to health centers by location, specialty and age and sex	- Datawells: Physicians by location, specialty and year of medical school graduation - OPDs: ⓐ Mass Dept PH (1970,1971): Number of OPD visits by place ⓑ GBHA (1970, 1971, 1972): Number of OPD clinic visits by place ⓒ Some hospitals have utilization data by age or clinic - ERs: ⓐ Mass DPH (1971, 1972): Number of ER visits by place ⓑ Mass Hospital Association Number of ER visits by place & emergent, urgent, non-urgent ⓒ GBHA (1970, 1971, 1972): Number of ER visits by place - NHS: Not available from all until October or later	Physicians: Must abstract primary care physicians; omit hospital-based physicians; code by census tract and neighborhood; convert year of medical school graduation into age; split physicians into 1/2 or 1/3 when 2 or 3 locations given - Must adjust for differences in age definitions used for pediatric visits - Must aggregate or average the different utilization rates obtained by source	- Should a survey be used to collect information on actual utilization of private physicians or should capacity measures alone be used? - Given lack of differentiation between specialties in the OPD, should all ambulatory care visits be included? - Given lack of data on visits to OPDs and ERs by age, how should pediatric adult and OB-GYN visits be allocated?

DATA OBJECTIVE OR IDEAL	DATA AVAILABLE	ADJUSTMENTS OR ADDED MANIPULATIONS NEEDED	ISSUES
6. RESOURCES AVAILABLE OVERALL - DENTAL			
Number of private dentists by age, neighborhood Number of dental clinic visits by location (and age?)	- Dentists: must be bought for 1¢/name - Clinics: Department of Health and Hospitals lists		- Is valid data available on the number and distribution of dentists
7. PATIENT ORIGIN			
For each facility or resource: distribution of patients by neighborhood	- ERs: Densen Study on patient origin by location - Other: Assorted data from a few hospital OPDs and NHCs	- Must adjust neighborhoods to correspond to ours in some cases	- Can a small survey of private physician patient origin be conducted? - What resources exist for OPD and NHC patient origin studies - or what estimation techniques can be used (e.g., in-patient origin, hospital estimates)

DATA OBJECTIVE OR IDEAL	DATA AVAILABLE	ADJUSTMENTS OR ADDED MANIPULATIONS NEEDED	ISSUES
8. CAPACITY INFORMATION: MEDICAL			
Private Physicians: Average number of visits per specialty per week (for N.E. or metropolitan areas) by age; Average number of weeks worked per year by specialty by age (for N.E. or metropolitan areas) OPDs, ERs, and NHC: Average number of man-hours available per year, by specialty Average length of time spent by physicians in an appointment, by specialty	① Amer. Med. Assoc. (AMA) Center for Health Services R&D: 1971 published: Average number of weeks practiced per year by census divisions and specialty (also by metropolitan areas) 1970 Average number of total patient visits per week by specialty and census division, 1971 Same for metropolitan vs. non-metropolitan areas Average number of hospital visits and office visits by specialties and location, 1971 ② OPDs, ERs, and NHCs: Unknown as yet	- Must adjust figures on the number of visits to eliminate in-hospital visits	- Should metropolitan or census division figures be used? - Is it possible to get an age distribution for private MD capacity by age?
9. CAPACITY: DENTAL			
Private Dentists: Average number of visits/year by age for either Northeast or metropolitan Other: Average number of man-hours available per year; average length of time spent by dentist in a single patient appointment	Private Dentists: Amer. Dental Assoc. (ADA) 1970: Average number of patient visits to independent dentists in 1970, by region Same for age Other: Unknown	-Must adjust regional dental figures by the age distribution of Boston dentists	

DATA OBJECTIVE OR IDEAL	DATA AVAILABLE	ADJUSTMENTS OR ADDED MANIPULATIONS NEEDED	ISSUES
10. OTHER PROVIDERS			
Number of osteopaths, chiropractors and podiatrists - by location and age Number of Public Health Nurses physician assistants, etc., by location and age Average length of patient appointment for above	- Osteopaths and Chiropractors: from phone book (name by location) - Podiatrists: From professional organization - Others: Unknown - Lengths of Appointment: Unknown		
11. HEALTH STATUS			
Indicators of health status or unmet primary care need, by neighborhood	- Unknown at present		- What level of resources can be committed to this? - What measures are valid and meaningful? - Are synthetic estimates reasonable?

APPENDIX B

LISTING OF TABLES INCLUDED IN THE BOSTON STUDY

METHODOLOGICAL TABLES

1A NCHS National Data on Medical Utilization for the Northeast

1B NCHS National Data on Dental Utilization for the Northeast

2 Estimated Number of Office Visits/Private Physician/Year - By Age for the New England Region, 1971

3 Response of Private Physicians and Dentists to Mail Survey on Patient Origin for One Day

POPULATION TABLES

A-1 Population by Neighborhood: City of Boston, 1970

A-2 Population by Neighborhood: Age and Sex: City of Boston, 1970

A-3 Population by Neighborhood: Ethnicity and Race: City of Boston, 1970

A-4 Family Income by Neighborhood: City of Boston, 1969

A-5 Population by Neighborhood, Median Income and Families with Income Below Poverty Level, City of Boston, 1969

A-6 Population by Neighborhood and Public Assistance Income: City of Boston, 1969

A-7 Population by Neighborhood and Social Security Income: City of Boston, 1969

A-8 Population by Neighborhood, Employment Status and Sex: City of Boston, 1970

MEDICAL UTILIZATION TABLES

A-21 Available Ambulatory Medical Visits/Year by Neighborhood and Source: City of Boston

A-22 Location and Capacity of Private Physicians by Neighborhood and Age: City of Boston

A-23 Origin of Private Physician Visits by Patient Neighborhood and Private Physician Location: City of Boston, Based on 1 day sample of patient origin

A-24 Number of Medical Visits Available from Boston Outpatient Departments/Year by Neighborhood and Hospital

A-25 Number of Medical Visits Available from Boston Neighborhood Health Centers/Year by Neighborhood and NHC

A-26 Number of Non-Acute Medical Visits Available from Boston Emergency Rooms/Year by Neighborhood and Hospital

A-27 Number of Medical Visits Available from Other Included Sources/Year by Neighborhood and Clinic

DENTAL UTILIZATION TABLES

A-28 Number of Ambulatory Dental Visits/Year by Neighborhood and Source: City of Boston

A-29 Location and Capacity of Private Dentists by Neighborhood: City of Boston

A-30 Origin of Private Dentist Visits by Patient Neighborhood and Dentist Location

A-31 Number of Dental Visits from Boston Outpatient Departments and Clinics/Year by Neighborhood and Source

A-32 Number of Dental Visits Available from Boston Neighborhood Health Centers and Dental Units/Year by Neighborhood and Center

A-9 Population by Neighborhood and Family Characteristics: City of Boston, 1970

A-10 Population by Neighborhood and Educational Status of Adults: City of Boston, 1970

A-11 Population by Neighborhood and Mobility Since 1965: City of Boston, 1970

A-12 Housing Units by Neighborhood and Number of Automobiles Available: City of Boston, 1970

HEALTH STATUS TABLES

A-13 Expected Versus Actual Mortality by Neighborhood: City of Boston, 1971-1972

A-14 Infant Mortality by Neighborhood: City of Boston, 1971-1972

A-15 Fertility Rate by Neighborhood: City of Boston, 1972

A-16 1969 Resident Births by Neighborhood and Extent of Prenatal Care

A-17 Selected Communicable Disease Rates by Neighborhood, Cases Per 100,000 Population: City of Boston, Jan.-Oct., 1973

A-18 Immunization Level of Children Entering Kindergarten and First Grade in public and Private Schools, 1973, by Type of Immunization and Neiborhood of School Location: City of Boston in percentages.

EXPECTED UTILIZATION TABLES

A-19 Ambulatory Medical Care Visits Expected/Year by Neighborhood: City of Boston, 1970 Population

-20 Ambulatory Dental Care Visits Expected/Year by Neighborhood: City of Boston

APPENDIX C

SAMPLE OF PARTS OF TABLES USED
TO DETERMINE USE OF MEDICAL SERVICES IN BOSTON

TABLE A-1

AVAILABLE SOURCES OF MEDICAL
VISITS BY RESIDENTS OF EACH AREA

CITY OF BOSTON

NEIGHBORHOOD	PRIVATE PHYSICIAN		O/P D		HMS		C H C		"THIRD PARTY SOURCES (Clinics)"		TOTAL	
	No.	Col. % / Row %	No.	Col. % / Row %	No.	Col. % / Row %	No.	Col. % / Row %	No.	Col. % / Row %	No.	Col. % / Row %
Allston-Brighton	176,113	7.0 / 69.8	67,715	4.9 / 18.9	4,857	1.6 / 1.9	19,815	5.0 / 7.9	3,851	1.5 / 1.6	252,690	5.8 / [illegible]
Back Bay	44,710	1.8 / 61.8	15,111	1.1 / 21.0	3,264	1.0 / 4.7	5,716	1.4 / 8.1	3,117	1.0 / 4.6	70,188	1.5 / 100
Charlestown	9,371	0.4 / 19.6	11,279	0.8 / 23.6	21,640	6.1 / 45	5,582	[illegible] / 11.9	958	0.3 / 2.0	48,190	1.1 / 100
Dorchester-North 1	51,111	2.0 / 31.9	60,102	4.3 / 37.4	30,650	[illegible] / [illegible]	26,078	[illegible] / 16.2	[illegible]	[illegible] / 1.6	160,603	3.5 / 100
Dorchester-North 2	56,295	2.2 / 30.6	69,471	5.1 / 37.7	35,161	10.2 / [illegible]	21,860	[illegible] / 11.9	2,193	0.1 / 1.3	184,184	4.0 / [illegible]
Dorchester-North 3	21,661	0.9 / 26.0	29,452	2.4 / 35.3	16,559	[illegible] / 20.1	10,066	[illegible] / 12.0	[illegible]	[illegible] / 1.5	91,116	2.0 / [illegible]
Dorchester-South	177,139	7.1 / 56.1	68,334	5.3 / 21.3	19,611	5.6 / [illegible]	4,661	[illegible] / 1.7	6,707	[illegible] / [illegible]	326,452	7.2 / [illegible]
East Boston	69,353	2.8 / 48.8	36,931	2.9 / 26.7	46,856	13.0 / 33.7	10,336	2.5 / 7.2	3,431	[illegible] / [illegible]	141,707	3.1 / [illegible]
Fenway	20,361	0.8 / 29.8	37,160	2.1 / 54.8	[illegible]	[illegible] / [illegible]	11,306	2.8 / 16.6	3,126	[illegible] / [illegible]	68,763	[illegible] / 100
Harbor Islands	0	-- / --	208	0.1 / 92.9	[illegible]	[illegible] / [illegible]	--	-- / --	81	[illegible] / [illegible]	[illegible]	[illegible] / 100
Hyde Park	35,658	1.4 / 70.5	10,035	0.7 / 19.1	0	[illegible] / [illegible]	3,186	2.1 / 8.6	3,341	[illegible] / [illegible]	[illegible]	[illegible] / 100
Jamaica Plain	51,064	2.1 / 37.8	40,230	3.4 / 29.8	30,975	[illegible] / [illegible]	37,130	[illegible] / 9.6	3,833	[illegible] / [illegible]	[illegible]	[illegible] / [illegible]
Roxbury	23,766	0.9 / 14.0	29,060	2.4 / 38.9	35,029	[illegible] / [illegible]	[illegible]	[illegible] / 14.3	1,196	[illegible] / [illegible]	91,971	2.3 / [illegible]
North End	6,956	0.3 / 29.0	10,125	0.8 / 42.6	3,510	[illegible] / [illegible]	3,306	0.9 / 13.9	319	0.6 / 2.9	[illegible]	[illegible] / [illegible]
Readville	17,640	1.3 / 70.2	20,569	1.7 / 57.1	682	[illegible] / [illegible]	[illegible]	[illegible] / 8.9	2,476	[illegible] / [illegible]	[illegible]	[illegible] / [illegible]
Roxbury	38,643	1.5 / 13.6	111,061	9.2 / 52.7	35,356	[illegible] / [illegible]	32,857	[illegible] / 15.6	2,713	[illegible] / [illegible]	[illegible]	[illegible] / [illegible]
South Boston	66,971	2.8 / 33.7	56,220	4.5 / 61.9	[illegible]	[illegible] / [illegible]	30,272	[illegible] / 15.2	2,393	[illegible] / [illegible]	133,633	2.9 / [illegible]
South Cove	15,620	0.6 / 56.5	3,442	0.3 / 13.3	[illegible]	[illegible] / [illegible]	[illegible]	[illegible] / 18.4	159	[illegible] / [illegible]	26,360	0.6 / [illegible]
South End	32,119	1.3 / 25.2	57,853	4.6 / 45.3	[illegible]	[illegible] / [illegible]	[illegible]	[illegible] / 1.8	3,356	[illegible] / [illegible]	127,469	2.8 / [illegible]
West End	28,344	0.9 / 54.6	10,104	0.8 / 19.4	2,060	[illegible] / [illegible]	6,734	[illegible] / 16.5	830	[illegible] / [illegible]	52,764	0.9 / [illegible]
West Roxbury	77,368	3.0 / 78.1	17,203	1.4 / 17.3	0	-- / --	3,570	[illegible] / [illegible]	1,154	[illegible] / [illegible]	99,196	2.2 / [illegible]
TOTAL CITY	1,062,192	[illegible] / 43.1	752,536	[illegible] / [illegible]	[illegible]	[illegible] / [illegible]	284,462	[illegible] / [illegible]	39,804	[illegible] / [illegible]	2,466,369	54.0 / [illegible]
OUT OF CITY	1,449,432	57.7 / 63.8	642,318	[illegible] / [illegible]	[illegible]	[illegible] / [illegible]	[illegible]	29.0 / 9.9	22,997	[illegible] / [illegible]	2,101,119	46.0 / 100
TOTAL VISITS	2,511,624	[illegible] / 55.0	[illegible]	[illegible] / [illegible]	[illegible]	[illegible] / [illegible]	[illegible]	[illegible] / 6.0	113,806	[illegible] / [illegible]	3,565,488	[illegible] / [illegible]

*These sources are the Lahey and Joslin Clinics, and the Harvard Community Health Plan.

C-1

TABLE A24

NUMBER OF MEDICAL SERVICES AVAILABLE TO MDPT CLIENTS
OUT-PATIENT SERVICES IN BOSTON NEIGHBORHOODS AND THE TOTAL

Page 1

	Medical Center		Community Health Center		Hospital Clinic		Casualty		Out-Patient		Visiting Nurse		Mental Health	
	No.	Row / Col.	No.	Row / Col.	No.	Row / Col.	No.	Row / Col.	No.	Row / Col.	No.	Row / Col.	No.	Row / Col.
Yearly Total	73432	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	12548	[illegible]	104401	[illegible]	15032	1.2 / 100	10101	.8 / 100
Out of City	23032	31.4 / 100	2567	1.0 / 1.0	9259	2.5 / 31	4551	1.0 / 1.0	[illegible]	[illegible]	-		N.A.	
Allston/ Brighton	3600	2.5 / 4.9	1539	3.3 / .6	597	1.1 / 2.0	130	.1 / .4	1253	2.6 / 1.2	9019	18.9 / 60.0		
Back Bay	2204	14.3 / 3.0	2931	19.1 / 1.1	418	2.2 / 1.4	65	.6 / .2	731	4.8 / .7	311	2.2 / 2.2		
Charlestown	661	5.3 / .9	1665	16.5 / .7	352	3.1 / 1.2	12	.1 / .03	418	3.2 / .4	-			
Dorchester #1	3600	6.0 / 4.9	26116	43.4 / 9.8	2198	3.7 / 7.4	749	1.2 / 2.3	4074	6.8 / 3.9				
Dorchester #2	1763	2.0 / 2	33311	49.6 / 12.5	2083	3.0 / 7.0	1822	2.7 / 5.6	3865	5.6 / .7	-			
Dorchester #3	955	3.2 / 1.3	9860	33.5 / 3.7	1195	4.1 / 4.0	1825	6.2 / 5.6	2194	7.5 / 2.1	-			
Dorchester South	5490	6.3 / 7.2	21052	23.8 / 7.9	4081	4.6 / 13.7	18343	20.8 / 5.3	7626	8.6 / 7.3	-			
East Boston	367	1.4 / .5	8794	25.2 / 3.3	527	1.7 / 2.0	30	.1 / .1	1985	5.7 / 1.9	-			
Fenway	5217	19.2 / 7.1	4530	16.7 / 1.7	780	2.9 / 2.6	26	.1 / .07	1358	5.0 / 1.3	286	12.6 / 19.2		
Harbor Is.	-		-		-		-		-					
Hyde Park	955	4.8 / 1.3	2931	14.6 / 1.1	105	.5 / .4	1922	9.6 / 6.0	1671	8.3 / 1.6	-			
Jamaica Plain	1763	4.6 / 2.4	8528	20.9 / 3.2	1493	3.7 / 5.0	424	1.0 / 1.3	6894	16.9 / 6.6	-			
Mission Hill	2057	7.1 / 2.8	6929	23.8 / 2.6	1523	5.2 / 5.1	117	.4 / .4	2820	9.7 / 2.7	1623	5.6 / 10.5		
North End	587	5.8 / .8	1332	13.2 / .5	260	2.6 / .9	9	.1 / .03	418	4.1 / .4	-			
Roslindale	2204	13.2 / 3.0	1865	9.1 / .7	111	.5 / .4	424	2.1 / 1.3	2611	12.7 / 2.5	-			
Roxbury	8523	7.7 / 11.6	50230	50.6 / 21.1	3554	3.2 / 11.9	274	.2 / .8	6476	5.8 / 6.2	782	.7 / 5.2		
South Boston	214	.5 / .6	26649	49.1 / 10.0	299	.6 / 1.0	1727	3.2 / 5.3	1149	2.1 / 1.1	-			
South Cove	220	6.4 / .3	1599	46.5 / .6	63	1.8 / .2	2	.1 / -	104	3.0 / .1	-			
South End	1102	1.3 / 1.5	46103	70.7 / 17.3	502	.9 / 1.7	17	.0 / .1	835	1.4 / .8	394	.7 / 2.6		
West End	294	2.7 / .4	533	5.2 / .2	314	3.0 / 1.1	11	.1 / .03	522	5.0 / .5	-			
West Roxbury	1984	16.3 / 2.7	1066	8.7 / .4	84	.7 / .3	98	.8 / .3	940	7.7 / .9	-			
TOTAL IN-CITY	43640	59.4	263824	360.0	20609	2.7 / 82	28030	3.2 / 86	47944	6.4 / 45.9	15032	2.0 / 100		

APPENDIX D

SAMPLE NEIGHBORHOOD PROFILE

WEST BOSTON*

General Description

West Boston is on the western border of the City, surrounded by Kingston, East Hill and Bushwick and defined in our study as extending from Broadway east almost to Main Street and from First Avenue south to Third Street and Market. These boundaries include as the southernmost parts of West Boston some areas below Third Street generally considered to be part of Bushwick (including the Main Street housing project) and exclude some areas bordering lower East Hill thought by some to be part of West Boston. As a result, some of the statistics (such as those on health center use) may be misleading. In general, the predominant characteristic of West Boston is its mixed, but somewhat young, population.

Demographic Profile

The population of West Boston contains a larger than average proportion of unrelated individuals (29%) but is still largely comprised of family units (71%). A very considerable proportion of these families are female-headed (36%) and the families are somewhat larger than the City average, including an average 1.43 children per family. West Boston residents tend to be younger than the City norm, with all age groups below 35 having an above average representation, and those above 35 appearing in smaller numbers. Twenty-six percent are under 15 years and 12 percent 65 or older. Women of child-bearing age constitute a higher than average 25 percent of the population, which, when considered in conjunction with a fertility rate higher than the City average (61 births per 1000 women 15 to 44), indicates considerable need for prenatal and post-partum care. Students may represent a considerable portion of the population, with 25 percent of the population falling in the 15-24 age group, the fifth highest proportion in that group of all neighborhoods.

The population of West Boston is varied. According to the 1970 census, 26 percent are black and seven percent are Spanish-speaking. However as in East Hill, Spanish community representatives suggest a much higher percentage of Spanish-speakers, citing weaknesses in census procedures and immigration

*Names of the neighborhood and its boundaries are changed but all data and facts are as they were included in the Boston Study.

since 1970, when the data were obtained, as possible reasons for what they see to be a very low figure.

The stability of the population is not particularly high--only 42 percent of West Boston residents lived in the same house in 1970 as in 1975. The mixed origins of those moving into West Boston reflect its diversity. Of those who moved into the neighborhood, 25 percent moved from other parts of Boston, 12 percent from other parts of Massachusetts, seven percent from out of state and eight percent from abroad.

By 1980, the population of West Boston is projected to decrease by 17%, the third largest drop in the City. This is attributable to a projected decrease in family size and probable failure of new residential construction to keep pace with demolitions.

Socioeconomic Status

Economically, West Boston is a poor neighborhood, with a median family income of $6,957 per year, the third lowest in the City. West Boston shares with East Hill the City's largest proportion of families with income below the poverty level (22%) and the City's third highest proportion of unrelated individuals in the same situation (34%). Medical indigency is a significant factor in the neighborhood--more families are concentrated in that income corridor (31%) than in any other. However, lower income families would seem more likely to receive Medicaid benefits (58% of all families with income below the poverty level, the largest proportion in Boston; and 26% of all families, the second largest, receive Public Assistance income). The 1970 male unemployment rate was 5.5 percent, somewhat above the City average. In a departure from the usual pattern, the educational level in West Boston does not correspond to the relatively poor economic levels, but is relatively high--the median number of years of school completed is 12.0.

Health Status

According to our health status indicators, West Boston is sicker than most other City neighborhoods. The overall mortality rate is somewhat higher than the City average, and about 16 percent higher than one would expect from similar populations nationwide. The infant mortality rate is much higher, in fact, the second highest in the City, 40 percent above national norms. There is a high incidence of late prenatal care as well (16 of all pregnancies were first seen by a physician in the sixth month

or later). Incidence of TB (31 cases per 100,000 population in 1971) is below the City average, though it compares equally with most neighborhoods, while the incidence of hepatitis (42 cases per 100,000 population) is considerably higher than the City rate. Levels of immunization of children entering school are generally above City averages (11% unimmunized for DTP/Td, 12% for polio, and 24% for measles).

Sources of Medical Care

West Boston residents use all types of sources of health care, but in proportions that are very different from overall City patterns. Only 14 percent of all medical visits were supplied by private physicians, while hospital outpatient departments and neighborhood health centers provide 32 percent and 39 percent each. Non-acute visits to hospital emergency rooms comprised another 14 percent of medical visits, the remaining one percent being supplied by other sources.

Metropolitan Hospital and Greenview Medical Center are the two main sources of institutional care. Of all outpatient department visits, Metropolitan provides 24 percent and Greenview 15 percent. Fairhaven Hospital provides an additional 13 percent. Through their emergency rooms, Metropolitan provides 16 percent of all non-acute ER visits, Greenview Medical Center 30 percent and Mission Pediatric Hospital 40 percent. The bulk of neighborhood health center visits are supplied by Amanda Capp (61%). Foxhall Institute of Health and the Bay State Community Health Plan West Boston Health Center provide 16 percent.

In the course of our interviews, it became clear that West Boston residents choose health care facilities for definite reasons. Many are willing to travel out of the neighborhood to Metropolitan rather than use one of the numerous facilities in the neighborhood because Metropolitan is perceived as friendlier and sympathetic, as "their hospital," while Greenview and other, more convenient facilities are seen as specialized and impersonal, expensive and "not for them." Some use Fairhaven Hospital, especially on referral from Metropolitan, but are not happy with the higher cost. The emergency room at Mission Pediatric is heavily used, probably because of its nearby location.

As regards neighborhood health centers, area residents differ with out statistics in that they do not consider the Amanda Capp Center and the

Main Street project it primarily serves as part of West Boston and thus do not consider it a major health care resource for the neighborhood. The West Boston Health Center (serving an enrolled population) serves some residents, especially for pedia rics, but it is avoided by others. Some residents hesitate to use the center because of its "Harvard" image. Some of the medically indigent are reluctant to use it because of its "welfare" image, or because they are used to paying for care and don't trust the quality of care they receive without payment. Many West Hill residents, especially the elderly and young families don't use the Center because they are used to using hospitals. Others will use it in a crisis, but not for preventive care.

While a simple head count gives West Boston the highest ratio of practicing physicians to population, in fact, these physicians provide little care to the community. Of the 22 West Boston physicians responding to our survey, only three provided any visits to West Boston residents. On the whole, only two percent of the responding physician visits went to West Boston residents, while 76 percent went to out-of-City patients. Residents claim that of a total 92.5 physicians listed as practicing in the neighborhood, only one devotes his practice chiefly to community patients, while the rest are hospital-affiliated specialists who have little to do with the neighborhood in which they practice: "You don't just walk into 110 Dover Street with your Medicaid card." Thus, while West Boston physicians are younger than those in other neighborhoods, their continued practice probably will not significantly change present low use patterns for private phsyicians.

Sources of Dental Care

West Boston also relies chiefly on institutional sources for its dental care. Only 40 percent of dental visits are provided by private dentists, which is the lowest percentage in all neighborhoods except Harbor Islands, a special case. The chief OPD providers are BU and Tufts dental schoos' clinics (25% and 16% respectively) and the Anderson Square site of the Bay State Community Health Plan which by referral from the West Boston Center

provides 28 percent of such visits.* Amanda Capp is the most used neighborhood health center, providing 63 percent of all NHC dental visits, the Foxhall Clinic provides 23 percent, and the Wheeler Street Health unit provides another 18 percent.

The pattern of care received from West Boston's private dentists is similar to that for physicians. Only five percent of dental visits supplied by dentists who replied to our survey went to West Boston residents, while 70 percent went to out-of-City patients. West Boston residents who go to private dentists seem to go mostly to Kingston and Broadway dentists (both areas in which large dental schools are located).

Needs

According to norms used in the study, West Boston uses from seven percent to 31 percent more medical visits, and between 42 percent and 60 percent fewer dental visits than are used by similar populations nationwide and in prepaid groups.

Community perceptions of need, however, vary somewhat from what might be expected from these figures. According to residents interviewed, West Boston has strong needs to attract physicians to practice in and serve the community, supplying the personalized care they feel is so lacking at the present time. They noted that while the community is across from major teaching hospitals, these hospitals are not felt to serve the community's medical needs. They also indicated that the Amanda Capp Health Center only serves a geographically small part of the neighborhood included in West Boston and that the only health center in the area served a prepaid enrolled population. Residents stated that resources should be used to expand ambulatory care. The strongly felt need for expansion of ambulatory medical services of all types overshadowed more specific needs in all comments made by residents.

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*Figures from BU, Tufts, and Forsyth Dental Clinics and from the VA and USPHS Hospitals may not be accurate since they were based on estimates. For these facilities, the only patient origin data which existed was that of the percentage of out-of-City utilization. In-City visits were said to be spread across all neighborhoods. Because of this, patient origin for these facilities was determined based on the population size within each neighborhood.

In summary, the data presented above indicate that West Boston receives more medical visits and fewer dental visits than comparable populations. The health status in the neighborhood is poor, perhaps suggesting the reason for above-average use of medical services. Based on these figures and community perceptions, it would seem that West Boston requires some effort to expand locally based ambulatory care in the neighborhood, both medical and dental. In the minds of those interviewed, such efforts can best be directed at providing a personalized type of care like that traditionally provided by private physicians, and preferably at providing care by private physicians themselves.

AMBULATORY HEALTH CARE PROFILE

West Boston

Summary of Population Characteristics and Trends; Health Status; and Health Care Needs, Resources, and Gaps

	Neighborhood	City of Boston	Rank (1= highest 21= lowest)
A. Population Characteristics			
1. Total population	19,144	641,250	15
2. % of Boston population	3.0	--	15
3. % under 15 years	25.6	23.8	9
4. % 65 years or older	12.4	12.8	12
5. % women 15-44 years	25.3	23.1	5
6. Projected population 1980	15,879	630,435	17
7. % change in population 1980	-17.1	-1.7	19
8. % Black population	26.0	16.3	5
9. % Spanish-speaking pop.	7.1	2.8	2
10. Median family income	6,957	9,133	19
11. % families with Public Assistance income	26.3	13.8	2

	West Boston	City of Boston	Rank (1= highest 21= lowest)
12. [illegible] individuals	20.3	21.9	8
13. [illegible] families	30.1	22.6	2
14. % adults [illegible] high [illegible]	50	54	11
15. % over 5 years of age living in same house 1975-1970	41.9	49.8	16

B. Health Status Indicators

1. Ratio of actual to expected deaths[1]	1.16	1.04	7
2. Actual - expected infant deaths/1000 births	7.3	1.3	2
3. Fertility rate (births/ 1000 women 15-44 years)	61.0	59.0	13
4. Percent of births with first prenatal visit in sixth month of pregnancy or later	15.83	10.99	3
5. Number of tuberculosis cases/100,000 population	31.3	41.0	10
6. Number of hepatitis cases/100,000 population	41.79	24.95	5
7. Immunization level (percent of children entering school completely unimmunized for):			
a) DTP/Td	11.2	16.5	13
b) Polio	12.1	17.8	14
c) Measles	24.3	23	10

[1] Less than 1.0 means actual deaths were less than those expected, and greater than 1.0 means actual deaths exceeded expected, while 1.0 means they were equal.

		West Boston		
		Neighborhood	City of Boston	Rank (1=Highest 21=Lowest)
C.	Summary of Expected Demand and Actual Use of Ambulatory Medical Care Services			
	1. Expected demand for ambulatory medical visits (range)	79,760 to 85,110	2,389,676 to 2,849,175	16
	2. Number of ambulatory medical visits used	91,074	2,464,369	14
	3. Difference between visits used and expected demand [less use(-), more use(+)] [range]	+21,314 to + 5,964	+74,693 to -384,806	5
	4. Percent difference between visits used and expected demand [less use(-), more use(+)] [range]	+ 30.6 to + 7.0	+3.1 to -13.5	5
	5. Percent of available visits coming from:			
	Private Physicians	14	43	19
	Outpatient Departments	32	31	10
	Neighborhood Centers	39	13	2
	Emergency Rooms	14	12	7
	Other Included Sources	1	2	18
D.	Summary of Expected Demand and Actual Use of Ambulatory Dental Care Services			
	1. Expected demand for ambulatory dental visits (range)	36,577 to 52,592	1,220,721 to 1,751,640	5
	2. Number of ambulatory dental visits used	21,239	973,165	3
	3. Difference between visits used and expected demand [less use(-), more use(+)] [range]	-15,338 to -31,353	-247,556 to -778,475	12
	4. Percent difference between visits used and expected demand [less use(-), more use(+)] [range]	-41.9 to -59.6	-20.3 to -44.4	17
	5. Percent of available visits coming from:			
	Private Dentists	40	79	20
	Outpatient Departments & Clinics	31	17	2
	Neighborhood Centers	29	5	2

APPENDIX E

SAMPLE SCHEDULING AND COST ESTIMATION FORMS

Attached are samples of two types of forms you may want to use to help estimate the kinds of staff and amount of money the study will require.

Form A provides a worksheet to use in scheduling the work and deciding how many staff of different types you will need to do the study. The actual tasks involved or time required can be changed as needed. To use it, indicate on the form in which months each task will be done. Then estimate how many days of each type of staff you will need to complete the task. Add up your figures across the different tasks and you can find out how many days of each staff type the study will require. If this seems too high, revise your study design and staff needs accordingly. If you multiply these staff days by the daily cost of each type of staff, you can find out what your labor costs will be.

Form B can then be used to determine the overall costs of the study. Estimate what you expect the expense to be for each type of cost listed. It is sometimes useful to write down your assumptions in making these costs (e.g. local travel @ 10¢ a mile for 200 miles; 5000 pages xeroxed at 5¢/page; X consultant for 10 days @ $100/day. If you add these up, it will tell you what the study will cost. If you are unhappy with the cost, look to your study design and see which parts of the work you can revise. Recost the study then.

APPENDIX E

SUMMARY COST WORKSHEET

Labor Costs	Days	Daily Rate	Cost
Project Director	____	_____	_____
Senior Staff	____	_____	_____
Junior Staff	____	_____	_____
Graphics	____	_____	_____
Secretarial	____	_____	_____
Other (_____)	____	_____	_____
Total Labor			_____

Other Costs			
Consultants	____	_____	_____
Local Travel			_____
Telephone			_____
Xerox or Printing			_____
Other:			
_____			_____
_____			_____
_____			_____
Total Other Costs			_____

Indirect Costs (if any)	
Fringe Benefits (@___% of ___,_____)	_____
Overhead Expense (@___% of ___,_____)	_____
General or Adminstrative Expense (@___% of _____, _____)	_____
Total Indirect Costs	_____

TOTAL COSTS _____

APPENDIX E

[illegible] AND STAFFING NEEDS ANALYSIS WORKSHEET*

Tasks	Months* 1	2	3	4	5	6	7	8	9	Staff Days by Type: Director/Supervisor 1.	2.	3.	Junior 1.	2.	3.	Secretary	Total
1. Overall Study Design																	
2. Identify Area Needs and Services																	
3. Collect Data																	
4. Analyze Data																	
5. Prepare Preliminary Analysis of Needs and Resources																	
6. Conduct Community Interviews																	
7. Revise Preliminary Analysis and Prepare Overall Findings																	
8. Identify Priorities and Develop Strategies for Meeting them																	
9. Prepare Final Report																	
10. Communication with Resource Group and Community (throughout the time)																	
TOTAL DAYS																	

* You will probably want to revise this worksheet in line with the tasks which you identify are needed and the time period you intend to take for the study.

** A horizontal line should be drawn to indicate the months in which you intend to carry out this task.