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**DEMONSTRATION OF HEALTH POLICY
ANALYSIS TECHNIQUES**

**A REPORT OF A SURVEY OF THE USE OF
STRUCTURED GROUP PROCESSES AND
MATHEMATICAL MODELS IN HEALTH
PLANNING IN THE UNITED STATES**

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INTRODUCTION

Purpose and Scope of Survey

As part of a project to examine the potential for utilization of health policy analysis techniques in health resources allocation decisions, Policy Research Incorporated conducted a comprehensive search and review of the literature on the use of structured group processes. The purpose of the review was to examine the characteristics of various structured group methods in terms of their application to:

- (a) sensitize health policy-makers to analytical techniques;
- (b) develop information required by the analytical process; and
- (c) develop consensus around the preferred alternatives defined in the policy analysis process.

This literature search yielded little published information regarding health planning applications. Therefore, a second phase of the review was conducted and is described in this report. It entailed a mailed solicitation of published and unpublished reports on application of structured group process and mathematical models in the 257 State Health Planning, and Health Service Agencies in the United States.

Survey Methods

On April 25, 1978, a letter of inquiry was mailed to the Directors of all Health Systems Agencies (HSA's) and State Health Planning and Development Agencies (SHPDA's). The mailing list for the survey was provided by the Health Resources Administration, DHEW. The letter outlined the purpose of the present study, identified the roles of the contractors, and requested the submission of any written materials which the HSA or SHPDA

had describing their use of: (1) structured group process or:
(2) mathematical modeling techniques.

Returns

Two hundred and fifty-seven letters of inquiry were sent. As of the close of intake for analysis (September 20, 1978), 138 responses had been received, two letters were returned undelivered. Fifty-nine separate items of information (e.g., written materials of some kind) were forwarded, but two items were provided without any identifying information and could not be cataloged. In addition, six letter responses were received which provided some descriptive material. These six letters are not included in the present analysis; the following refers to the fifty-seven identifiable items which were submitted.

Reviewing the Returns

A structured form was used to review each of the items returned. The form used was the same as that used by Policy Research Incorporated in its analysis of the published literature regarding structured group processes, although modifications to individual forms were made to incorporate data on mathematical models. Each cataloged information item was reviewed by a research associate and the appropriate information transferred to the form. The forms were reviewed to identify those documents which contained information on the use in practice of structured group process techniques and mathematical models. Information items so identified were grouped in clusters according to technique and analysis was accomplished on each cluster.

Layout of Report

The results of the inquiry are presented in the remainder of this report, as follows:

- (1) use of structured group processes in health planning; and
- (2) use of mathematical models in health planning.

RESULTS: USE OF STRUCTURED GROUP PROCESSES IN HEALTH PLANNING

Two types of structured group processes are discussed: (1) the delphi technique, and (2) nominal group process. In addition, (3) interacting groups, and (4) other methods not included in the first three categories, but described in the reports received, are briefly summarized.

Delphi.

Two information items contained descriptions of the use of the delphi technique. One of these involved priority setting, the other involved generating information about health care needs within a multi-county rural/urban area. In neither case were the results of using the process described.

The two information items describing the delphi process indicated considerable disparity in application of the process. One application took a very strict methodological approach to the problem, producing what might be referred to as a "classic" delphi; the other application was described as a "modified delphi". However, it should be noted that the description of the "classic delphi" was in fact a manual for conduct of a delphi, and not an actual description of the process in use. Supplementary information from the agency indicated that the delphi had been carried out, but there was no information on adherence to the methods described, nor on results. Information was lacking on group size, questions asked, or number of iterations accomplished. The information derived from the delphi was used, however, in program planning according to an accompanying letter.

The modified delphi described in the other information item bears greater resemblance to a survey than to a classic delphi. The group surveyed was composed of 113 members of a sub-area council for an HSA. The group was provided with input in the form of lists of goals--either national and state goals or previously selected, but unranked, local goals. A ballot was mailed to the 113 participants who were instructed to select their ten most important goals. These goals were tabulated by frequency of selection and ranked in this manner. The ranked goals obtained this way were submitted to a health plan development committee and to the Board of Directors of the HSA and a "final ranking" was produced by some unspecified interaction of these groups.

Nominal
Group

Nine information items described the use of nominal group techniques; two items described the same application. Only one of the eight discrete applications was used solely for the purpose of generating information with regard to health problems, the remainder involved priority setting as an end product of the process.

Six of the eight applications were attempts to gain public input for the health planning process and involved members of the general public, or specific publics interested in health planning (e.g., invitations to the entire registered membership of an HSA). Two nominal group applications involved restricted memberships; one involved members of the State Health Planning Advisory Council, the other included the State Health Coordinating Council.

Size. All the applications used a small group format with groups specified ranging from 3 to 13 in size. The open, public, nominal groups were apparently able to attract a cross-section of community members in most cases, though one application specified that the failure to involve local people in the planning process resulted in poor representation of minority groups and low-income residents. Where broader representation was obtained it seemed to be associated with widespread publication of meetings, referrals to specific people for invitations, and publication through a community center.

Materials and training. Few of the information items contained information on the training of facilitators, but where mentioned it appeared that little training was provided. Materials specified included flip charts, watches, writing materials, and balloting or voting forms.

Process. All applications mentioned a core of features of the nominal group process. This core consisted of an introduction to the task and the process, a period of time for the silent generation of ideas, recording of a master listing of ideas generated, discussion of those ideas, and, finally some balloting procedure to rank the ideas generated. In several applications the initial prioritizing of ideas was also the final prioritization and no second iteration was accomplished. In the remaining applications the first prioritization was followed by a discussion period and a second, final, balloting procedure was accomplished to produce a final ranking. Where

multiple groups were involved in the same place, this was accomplished by bringing all nominal groups together.

Outcomes of the process in planning. None of the materials reported specifically that the final prioritization of items from the nominal group process was used directly in the planning process, although this was implied, in particular when the group was a designated planning body (e.g., the State Health Council). In all instances, the results produced were used in coordination with other materials produced by task forces, staff, or committees.

Advantages and disadvantages. Virtually no information was provided on perceived advantages and disadvantages of the nominal group method. One item noted it was an "exciting, educational experience," another referred to the benefits of every member of the group having equal opportunity to contribute ideas. The only disadvantage noted was a query concerning the validity of results as a function of the sample of people attending the meeting.

Interacting Groups

Twelve information items dealt with the use of interacting groups in generating information about health problems or needs, priority-setting, or decision-making. These included two reports of public hearings, eight reports of processes involving panels of experts, or committee members or other internal personnel, and two items mentioned the use of task forces. None of these studies involved an iterative process; several involved the use of scoring procedures using criteria or weighted criteria in prioritizing.

None of the descriptions of interacting groups appeared to cover techniques or methods involving the use of structured groups which would merit analysis for the purpose of this survey. These methods were simply committee or task force meetings in which information was discussed and decisions made or priorities established on the basis of those discussions. Indeed, in several cases, it was difficult to discern from the literature provided whether a face-to-face meeting had taken place and some of the items classified as interacting group descriptions may well have been simple surveys of memberships using the scoring of criteria sheets as the basis for decision-making or priority-setting. No further analysis of these interacting group items has been undertaken.

Methods
not
Involving
Structured
Groups or
Models

Forty-five of the information items reviewed provided some information on priority-setting, decision-making, or information generating processes. Seven of these items provided basic standards for decision-making (e.g., a set of criteria were provided such that fulfillment of the criteria resulted in one decision, and failure to fulfill criteria resulted in another decision). These "standards" were generally applied to decision-making with regard to applications for CAT Scanners or other technology items, that is, they were resource allocation standards. Three information items described attempts at information generation or priority-setting through survey techniques. Two items were concerned with public surveys to obtain information about perceived health problems; one item was a priority-setting procedure through a questionnaire survey of an internal committee.

RESULTS: USE OF MATHEMATICAL MODELS IN HEALTH PLANNING

Twelve information items described models of one kind or another. Two of the models described were clearly conceptual models, not mathematical models for priority-setting or decision-making. Of the ten mathematical "models", nine were essentially algorithms for calculating bed need, rather than generalized decision-making models; one was intended for use in priority-setting.

Use in Practice

Little information was returned regarding the use in practice of algorithms, or models, but it appears that for the most part they are theoretical or proposed, and have not been tested in real-life application in the agencies responding to the inquiry. Seven "models" described in the materials provided were clearly not in use; one was specified as being used "as a basis for planning". Four mathematical "models" (the bed need algorithms) are likely in use according to the information reviewed. No indication was provided of the utility of the formulae for estimating need, and plan formulation.

In responding to the survey, the planners consistently mentioned the problem of data availability, and lack of staff time as reasons for their not using mathematical models in plan formulation.