Research monograph series no.5

Administrative Studies Program

Australian health care futures

John Tydeman
Robert Mitchell

Research monograph series no.5

Australian health care futures

John Tydeman
Robert Mitchell

Administrative Studies Program
The Australian National University, Canberra

ISBN 0 908160 05 4

TABLE OF CONTENTS

Table of Contents (Contd.)

Table of Contents (Contd.)

ACKNOWLEDGEMENT

This study was a commissioned research project funded under the Health Services Planning and Research Program of the Hospitals and Health Services Commission and the Department of Health.

The authors would like to thank Dr. Paul Gross of the Hospitals and Health Services Commission for his interest in and contribution to the formulation of the project.

Finally, our sincere thanks to Emma Harrington, Sharon Jackson, Barbara Quinn and Bev Peters who assisted in the organisation of the seminars, processing of information, collating of results and typing of manuscripts.

CHAPTER I

INTRODUCTION

In April 1977 the Standing Committee on Health Manpower Training of the then Hospitals and Health Services Commission (HHSC) called tenders for a commissioned research project entitled "Polling Experts in Health Care in Australia to Assess Future Manpower Needs in Australia in the Next Two Decades". The broad aim of the research, as stated by the Committee, was to prepare a report summarising the collated views of a carefully chosen panel of experts from different parts of the Australian health care sector on what are the likely medical manpower needs of the 1990s. A tender was duly submitted and accepted by the Commission. The project commenced in late June 1977.

This monograph provides a detailed description of the underlying methodology, the approach and the findings of the research project.

Prior to embarking on the task of documentation of the study it is necessary to offer brief comment on, first, the general climate in which the study was conducted and, second, a fundamental methodological assumption of the approach.

Health care in Australia is currently undergoing a period of turbulence. Estimates by the Federal Minister for Health suggest that health expenditure in 1977 amounted to an unprecedented $7,500 million; health insurance rates, both private and public, are being increased; academics, bureaucrats and medical practitioners are claiming that there is an "over-supply" of doctors; nurses are embarking on non-hospital based training and nursing assistants are being recommended to complement nursing aides; hospital costs are increasing and it is being advocated that quotas be introduced for many University trained health professions. There are as many sets of forecasts of future demand and supply as there are forecasters and whilst there are still delays of six months to visit some specialists it was reported recently that doctors were on the dole in South Australia. The aim of this study was to identify those future changes and developments which health care experts believe will affect health manpower and training needs over the next two decades.

A fundamental assumption of the research method is that it is both valid and useful to collect and assess the subjective opinions and

judgements of people in a problem situation and to use this information in the planning process.

The future is uncertain and to that extent cannot be predicted in detail. The reduction of this uncertainty is generally accepted as a major objective of planners and forecasters. Decisions in the area of health care training concern society, often involve long time-lags between action and reaction and typically involve data and considerations which are highly subjective. They do not obey known-laws and relationships, they cannot be subjected to repeatable experimentation and, thus, they cannot be predicted on the basis of past experience. They must, it is argued, be evaluated using subjective judgements. The underlying research methodology is outlined in some detail in the next chapter. It is described, first, in general terms i.e. not specifically related to health manpower and training, and then, in later chapters, applied to the problem context. A critical evaluation of the approach is offered in a concluding chapter.

CHAPTER 2

RESEARCH METHODOLOGY

Introduction

Decisions taken now in regard to health education strategies, manpower training and resource allocation will partly determine the future but their effect will be greatly influenced by the advances in technology, changes in social and professional attitudes to the health delivery methods, possible modifications to the mode of financing health care and future government priorities for the health sector. If we are to make the correct decisions we must attempt to anticipate the possible directions in these and other relevant areas. Recent events which show the difficulties that arise when unforeseen developments occur include the non-recognition of the cost savings of new medical technology, e.g., pathology testing, inadequacies of medical education for community health programs and the unfortunate side effects of the recent Medibank schemes.

It is not necessary to stress the need for planning to take account of possible changes in the health care environment - the question is what are the likely future developments? The immediate problem facing health care planners is to devise a way of ensuring that potential developments are identified and their impact assessed. Ideally this should be a continuing process which results in appropriate and timely adaptations of the relevant areas of the system.

Because the future is uncertain it cannot be predicted on the basis of past experience. Every worker in the field, alone, has, based on his knowledge and experience, some idea of potential difficulties within the system and of possible future changes. We believe that these subjective judgements in aggregate form the most relevant source of information for providing insights into the "unpredictable". But collection of these judgements and the transformation into useful information is by no means a straight forward task.

An approach has been developed by Tydeman and Mitchell (1977) which, if applied correctly can accurately reflect the collective wisdom and provide an additional dimension of information for the decision maker. The procedure, which has been called subjective information

modelling, provides a framework for extending the uncertainty context in which decisions are made. The approach is iterative, involves continual liaison with management and the participating groups and is concerned with the broad implications of questions of the type: "But what happens if such-and-such occurs?" This, however, is only the beginning. It is the evaluation of alternative policies within this subjectively derived uncertainty context which is of significance.

The general subjective information modelling procedure, SIM, may be summarised in five basic steps: event generation, event assessment, cross-event analysis, scenario generation, and systems impact analysis and evaluation, and an overview of these procedures follows (Figure 1). It should be noted that the findings of this project depend on the first two stages: event generation and event assessment. As such they will be discussed in more detail.

As a first step and to provide a focus for the subjective information input, it is necessary for the analyst or members of the decision making group to generate a set of possible disturbances, changes or external "shocks" to the status quo. Procedures such as group brainstorming and lateral thinking have been suggested as possible ways of generating this information.

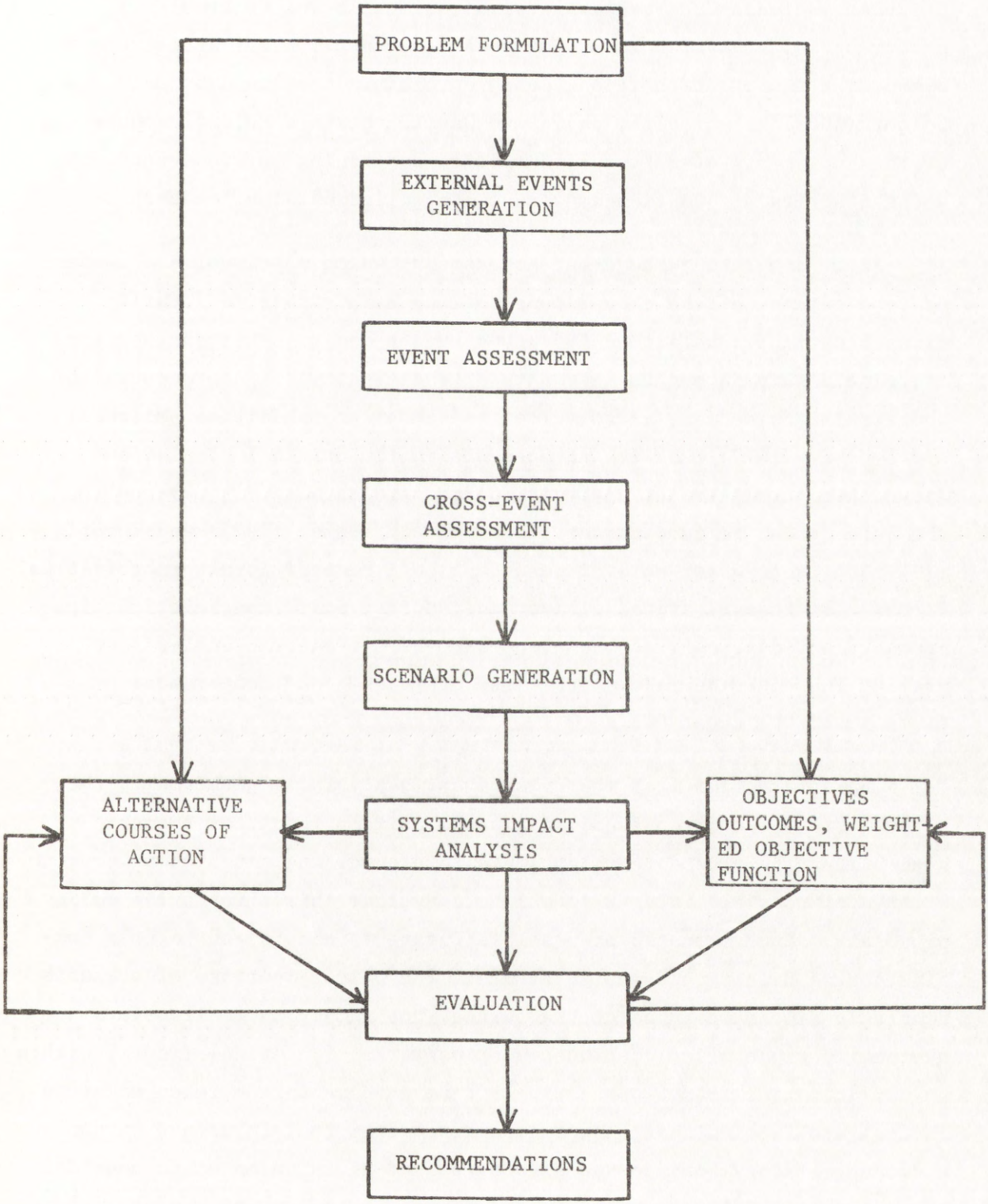
This broadly defined event or issue set contains those potential disturbances or changes in the environment which are either outside the control of the decision maker or not explicitly contained within the formal analysis, but whose occurrence within some specified time period, to be determined prior to the analysis, may inhibit or enhance the effectiveness of a particular course of action or influence the system outcome. The term "event" includes events, trends and projections. Explicit definitions of these terms will be offered in the next section.

It is reasonable to assume that the set of issues will not be exhaustive but will be limited by the insights of those participating in the exercise. Group composition is problem dependent. At one end of the spectrum random sample selection procedures may be adopted to determine composition of the group and at the other, a complete enumeration of all involved in the process may take place.

Once a set of issues (events) has been established it is then necessary to evaluate the expected impact on the system of the occurrence

FIGURE 1

Subjective Information Modelling



of each particular event. The object of event assessment is to collect and aggregate the judgements of a group of individuals for a number of measures including the probability, significance and desirability of occurrence of a particular set of general events. Event assessment is a modification of the original delphi procedure developed by Dalkey and Helmer (1963) in which the objective was to obtain a reliable consensus of the judgements of a group of experts, concerning future events, by using a series of questionnaires and controlled opinion feedback.

After completing the event assessment, which may involve a number of replications of the above steps, it may be possible to identify first-order inter-relationships among events and to determine patterns of relationships among the elements of the event set. A procedure for undertaking this task, which relies on causal probabilities (Mitchell and Tydeman (1977)) has its antecedents in the original simulation approach to cross-impact analysis (Gordon and Hayward (1968)) and in the more recent refinements of that approach (Enzer (1972) and Turoff (1972)). Cross-event analysis uses subjective conditional probabilities, derived from causal probabilities, to identify pair-wise relationships among selected members of the event set and sociometric analysis to provide the decision maker with a map of interdependencies among elements of the event set.

The information from the cross-event analysis, together with the output from the event assessment, is the primary input for scenario generation, the procedure which seeks to provide the decision maker with a range of possible futures in which to evaluate his alternative policy proposals. Each scenario or possible future is considered to be a combination of binary outcomes of events. The primary purpose of scenario generation is not to predict the future, but rather to facilitate a systematic exploration of branches or networks of critical events, within an explicit time frame. Scenario writing enables the decision maker to investigate the implications of departures from the status quo within a wider uncertainty horizon and encourages the decision maker to consider the interaction of future events as a formal component of the analysis. It is not an <u>end</u> in itself.

Scenarios provide a context in which a set of policy options may be evaluated. In addition, it is possible to determine the impact of each of the selected scenarios on an existing or proposed system. This

requires, first, a detailed systemic representation of the problem context and, second, the specification of criteria for impact evaluation. This approach is novel in that the "problem" becomes the system-scenario and as such there may be a number of "problems" and a variety of different strategies to be evaluated for each such "problem". A slightly modified format of event assessment is suggested as being one method of determining impact. Subjective information is collected for each scenario on such items as system activities affected, magnitude and direction of any effects and expected consequences for system outcomes (performance measures).

In addition to scenario-system impact the analyst is concerned with the evaluation of alternative strategies within this uncertainty context. The input at this stage is not confined to the qualitative dimension but incorporates, in addition to the alternative scenarios, the decision makers' weighted objective set and the set of strategies or courses of action to be evaluated. The evaluation may be multi-dimensional if alternative scenario-system pairs imply non-identical sets of possible strategies. An estimate of effectiveness of each policy alternative is calculated for each scenario by relating the particular alternative to the decision makers' weighted objective set. An output from the evaluation is a trade-off matrix for each strategy, for each scenario (including the 'nothing happens' or maintenance of the status quo possibility). This enables the decision maker to compare alternatives in the light of expected future uncertainties.

The final input for the decision maker is now sufficiently comprehensive to enable the courses of action to be evaluated within a spectrum of alternative futures. In addition, information is available for investigating the consequences of disturbances to the status quo. It is this collection and evaluation of information which was the focus of this study.

Event Generation

The success of the event generation is critical if the approach is to be considered as a serious attempt to improve planning and decision making generally.

An obvious prerequisite to event generation is the specification of a problem context. It is unlikely that all participants will be

unanimous in their interpretation of the "problem" or "issue" being evaluated but it is essential that there be broad agreement as to the problem area. Once the problem context has been specified and preliminary analysis undertaken it is necessary to generate a set of exogenous factors or possible external disturbances to the status quo which may occur within some specified time period. Helmer (1977) considers these factors to be of two types - events and trends - and makes an important distinction between them.

An event is defined to be a binary phenomenon which may be deemed either to occur once and only once or else not occur in the specified time horizon. Events are, as Bloom (1976) points out, "characterised by occurring suddenly and unexpectedly and by having some impact upon the performance of the system". Such an impact upon system performance may be significant or insignificant, desirable or undesirable, enhancing or inhibiting. As the objective is to provide the decision maker with a rich picture events may include social, political, technological, economic, legal and behavioural, issues.

Trends, on the other hand, include time series data that ordinarily change gradually with time. They are not seen as being one off, as are events, but from time to time there are sudden and unexpected deviations or perceived deviations from the long-term trend which may cause some degree of consternation. In Australia, for example, social and economic planning in the 1960s and early 1970s was based on long term trends for population growth which were shown to be significant over-estimates. The implications of these "deviations" were of importance for national, state and regional planning.

A trend statement is also an alternative to a complex structural set of specific event statements and in this sense provides a valuable tool for including issues which are vague and ill defined yet potentially of importance. For example, rather than attempting to specify a number of precise levels of unemployment for particular years it is possible to consider likely deviations about a known or postulated trend.

A projection is defined as a minor variation on a trend. Projections usually refer to time series for which quantitative measures have been, or could be, recorded e.g. the consumer price index, doctors per head of population. Trends on the other hand contain those

series for which explicit observations have not been recorded (and could not easily be recorded) e.g. demand for domiciliary services, proportion of treatments for social disorders performed by registered professionals other than doctors, and those series which may be important but can only ever be estimated subjectively e.g. acceptance by the community of community health centres, acceptance and use of natural food diets.

The event set should contain those potential disturbances or changes in the environment which are either outside the control of the decision maker or not explicitly contained within the formal analysis, but whose occurrence within some specified time period, to be specified prior to analysis, may impair or enhance the effectiveness of a particular course of action or influence the system outcome. An alternative formulation is to allow time to be a variable in the analysis and at the next stage, event assessment, to consider the time at which the event occurs as the initial piece of information. As man is not omniscient it is reasonable to assume that the event set will not be exhaustive and will be limited by the insights of those participating in the exercise. For this reason it is argued that those who are concerned with making the decision and those who are directly affected by it should be involved in this phase of the exercise even if, subsequently, other members of the organisation participate in the later stages. Usual sampling procedures, e.g., random, representative or systematic, may be used to select the sample to participate in the event generation.

Procedures for generating events have been suggested by De Bono (1970, 1971), Armstrong and Hobson (1973) and Emery (1976), and an outline of procedures for participative group exercises is offered by Delbecq (1975). One technique which is frequently used is an unstructured group brainstorming session. Whilst not denying the need for lateral thinking and random idea production during event generation, it is suggested that, in addition, there is a need to introduce some structure into the event set. This is especially useful in situations in which the event generation procedure tends to be narrowly focussed, either unintentionally or as a consequence of the composition of the participating group. For example events could be classified as social, economic, political or technological events, and this structure may suggest other possible events. There does not seem, however, to be

any explicit definitive procedures which may be adopted for generating an exhaustive set of events; in fact, the option exists at one end of the spectrum for the analyst to specify the initial input, and at the other end to engage group members in a totally unstructured search for "disconnected futures". This latter activity requires that participants attempt to postulate a future (or set of futures) which is not necessarily an extrapolation of the present and in fact may bear no obvious relationship to what currently exists. Event generation, along with the other steps in this method, is internally iterative and the resulting event set is subject to additions and deletions at each iteration. Some iterations may be the result of decision makers not being involved in the initial event generation and then seeking to influence the outcome by suggesting new events. Hopefully, if they are involved in the initial stages the need for iteration will be reduced.

In conducting event generation exercises it has been found important to avoid limiting the participants' ideas to the type of external event finally required for scenario generation. It is often very difficult to draw the distinction between events which are outside the control of the decision maker and events which are really alternative policies or the outcomes of the interaction of policies and the environment. In some cases the distinction is almost arbitrary. It is very distracting for participants to have these issues raised when they are concentrating on visualising possible developments and it is therefore suggested that no restrictions be imposed and that the analyst be given the task of classifying the resulting ideas. An important by-product produced by this procedure is preliminary input to both policy formulation and systems impact analysis.

An alternative approach, the Search Conference, is outlined by Emery (1976). The essence of the information generation is not markedly different from the procedures mentioned above, the aim being to encourage all participants to record all points of view, both pro and con on any issues perceived to be relevant.

Event Assessment

Event assessment is a modification of the original delphi procedure developed by Dalkey and Helmer (1963), and Helmer (1963, 1967) in which

the objective was to obtain a reliable consensus of the judgements of a group of experts, concerning future events, by using a series of questionnaires and controlled opinion feedback. Helmer (1967) elaborates upon this point in some detail.

"Among the new methods that are under development is one that has become known as the Delphi Technique, which attempts to make effective use of informed intuitive judgement. It derives its importance from the realisation that projections into the future, on which public policy decisions must rely, are largely based on the personal expectations of individuals rather than on predictions derived from a well-established theory. Even when we have a formal mathematical model available - as is the case, for example, for various aspects of the national economy - the input assumptions, the range of applicability of the model, and the interpretation of the output all are subject to intuitive intervention by an individual who can bring the appropriate expertise to bear on the application of the model. In view of the absence of a proper theoretical foundation and the consequent inevitability of having, to some extent, to rely on intuitive expertise - a situation which is still further compounded by its multidisciplinary characteristics - the best we can do, under the circumstances, is to make the most constructive and systematic use of such opinions."

Since the publication of the original Delphi experiment in 1963, there have been many modifications to the procedure, in particular, the exploratory forecasting context has been extended to include normative forecasting, and it has been applied to a wide range of technological, economic and social problem situations. Applications within a health care context are not widely referenced but include studies which focus on: examining developments in medicine (Bender et al (1969)); identifying future needs in health care delivery (Roper and Dyer (1975)) using the Delphi method to assess community health needs (Schoeman and Mahajan (1977)); health services research for decision-makers: the use of the delphi technique to determine health priorities (Moscovice, Armstrong, Shortrell, Bennett (1977)); evaluating alternative modes of consumer participation in community health services (Tydeman (1977)).

The approach described in this Chapter is a further modification in which, among other things, the time period is fixed, for example, a five year planning period, and the participants are requested to

provide information on such issues as the likelihood of occurrence, the desirability given that occurrence takes place and the significance of occurrence. The above three measures have been incorporated in a number of studies and they provide some degree of breadth to the subjective analysis. A second, and more fundamental, benefit of a number of measures, is that participants frequently express subjective probability in terms of their desired probability or their estimate of importance of occurrence. Explicit recognition of the differences among these various concepts goes some way towards improving the quality of the subjective information.

The objective of Event Assessment, then, is to collect and aggregate the judgements of a group of individuals for a number of measures including the probability, significance and desirability of a particular set of generated events. Further analysis may then be restricted to high ranking events or other event selection criteria may be introduced. For purposes of presentation the discussion will focus first on events, as defined above, and then on trends.

A procedure for event assessment has been developed by Day, Tydeman and Leoprapai (1976) which requires that, for each event, each respondent provides subjective estimates of (i) the likelihood of the event occurring within a specified time horizon, (ii) the significance, or importance given that occurrence takes place within the specified time horizon, and (iii) the desirability of occurrence within the time horizon. A further measure, respondent confidence in the probability estimate was also included as it was found that participants expressed varying degrees of knowledge about the underlying events.

An impact score may be calculated as a weighted function of the product of probability and significances; a weighting which represents respondent expertise or confidence in his estimates may also be included, thus -

$$I(j) = \sum_{i=1}^{n} f(S_i(j)) \; g(P_i(j)) \; W_i(j)/F(j)$$

where I = standardised impact score for event j.

$f(S_i(j))$ = function of the significance estimate of the i^{th} respondent for event j.

$g(P_i(j))$ = function of the probability estimate of the i^{th} respondent for event j.

$W_i(j)$ = confidence weighting for individual i for event j.

$F(j)$ = standardising factor for event j.

n = number of participants.

This two-stage procedure has been preferred to asking respondents to estimate a composite impact score directly because the conditional question has been found to elicit more consistent responses.

It has been found that expert "statistically untrained" participants have difficulty with the concepts of subjective probability, significance and desirability; a problem which is confounded if numerical scales are introduced. A qualitative scale, therefore, was developed for each measure, probability varying from: won't occur; very unlikely; unlikely; fifty-fifty; likely; very likely; to certain to occur; significance was recorded as: no importance; little importance; some importance; important and very important; desirability ranged from: very undesirable; undesirable; neither; desirable to very desirable. The scale for confidence, or respondent reliability in the subjective probability estimate ranges from very unreliable; unreliable; unknown reliability; reliable to very reliable. Although numerical values were later attached to each scale it should be stressed that this was mainly to enable ordinality to be introduced among the members of the event set and that to some extent any numerical scale is necessarily arbitrary. The rating scales currently in use are shown in Table 1(a).

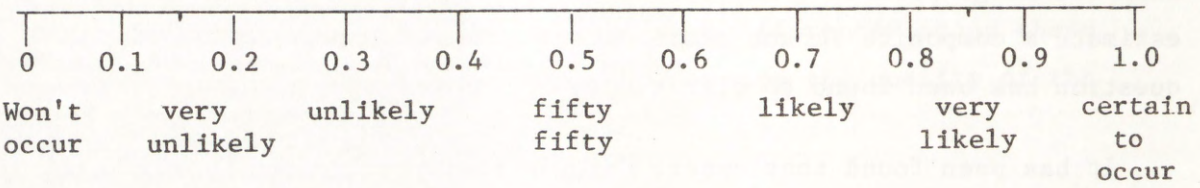
Besides these numerical rankings and the relevant frequency distributions of the respondent group, a number of two-way contingency tables, for example, probability x significance, probability x desirability and impact x desirability may be constructed. These depict preliminary clusters of events, which may or may not be causally related, and are useful for identifying appropriate policies. For example, consider a two-way classification of impact and desirability. This would assist in finding policies which increase the likelihood of occurrence of highly desirable-high impact events. Conversely, it may be possible to structure courses of action which reduce the likelihood (or significance) of highly undesirable-high impact policies.

TABLE 1

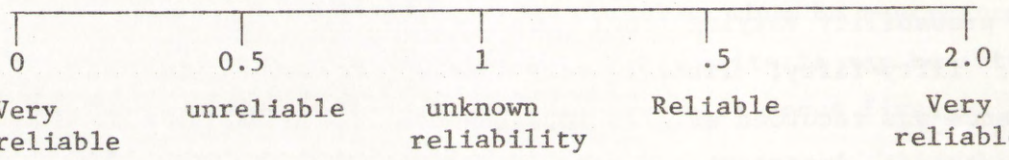
(a) Event Assessment (Qualitative and Quantitative)

Rating Scales

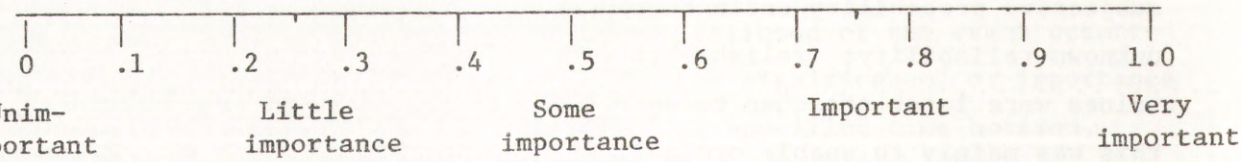
1. Probability of occurrence



2. Confidence of probability estimate



3. Significance of the event



4. Desirability of occurrence

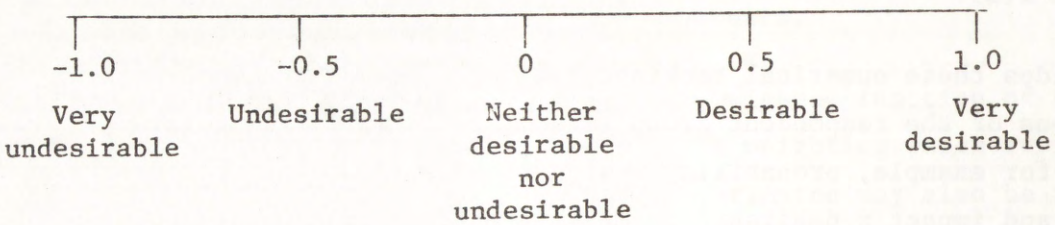
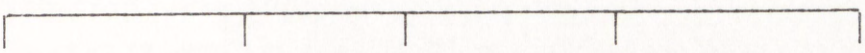


TABLE 1

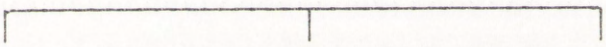
(b) Trend Assessment Rating Scales

1. Estimate of Trend Change



-1.0	-0.5	0	0.5	1.0
Decrease Significantly	Decrease Marginally	No Change	Increase Marginally	Increase Significantly

2. Desirability of Directional Change



-1.0	0	1.0
Decrease	Neither	Increase

There are obviously a variety of possible strategies and this analysis provides the decision maker with some insights into those strategies which seem more appropriate.

The procedure of trend assessment is similar to that of event assessment outlined above. First, a five point qualitative scale is used to estimate the change in the level of the trend by the end of the time horizon, the points being: decrease significantly, decrease marginally, no change, increase marginally and increase significantly. Second, a measure of desirability of trend direction was estimated using a three point scale (the scales are contained in Table 1(b)). As before it is possible to compute averages and to construct two way plots e.g. magnitude of trend change against direction of desirable change.

The computations requested of participants for projections merely required them to give estimates of the lowest, most likely and highest values which they believe each particular projection could reach by the end of the twenty year time horizon. In this study no explicit measures of confidence, significance or desirability were calculated for projections.

As with the traditional delphic procedure event (and trend) assessment may be performed under conditions of anonymity, they are iterative and incorporate statistical feedback display. Unlike delphi this procedure is not specifically directed towards achieving consesus and to this end outliers, or respondents at the extremes of the spectrum, are not singled out and asked to justify their position, a procedure which is frequently incorporated in many delphi studies. In order to generate new information <u>all</u> participants are asked to give reasons for their original responses. "Its goal in this function is not so much to obtain a consensus as it is to establish all the differing positions advocated and the principal pro and con arguments for those positions". (Turoff 1970)). The benefit of an iterative approach is only realised if respondents are provided with additional information, in the form of statistical displays and insightful comments at each successive round of event assessment. It is acknowledged that these displays may have the effect of producing conformity and in order to avoid conformity for its own sake, it is suggested that they not be provided on the initial rounds of event assessment.

The technique of event assessment produces a substantial amount of evaluative statistical information. Each event may be analysed through probability, significance, desirability and impact scores, and the event set may be investigated in terms of the relationship between any pair of measures. Similar computations may be performed for trends and projections and in the case of projections the postulated figures may be compared to the existing time series and the extrapolation from the quantitative data. Some subjective discretion, however, is required in interpretation as some events may be completely, or partially, outside the decision maker's range of influence and other events may have scores unduly influenced by the wording of the event statement. It is our experience that except in very tightly controlled and monitored situations, e.g. within a single organisation, it is almost impossible to get unanimity in the interpretation of the event statements. The option to search for clarification always exists.

On completion of event assessment the option exists to move directly to scenario generation and then to systems impact analysis. In this study the events and trends were grouped in a number of ways to provide information about pertinent developments within the health care environment.

CHAPTER 3

FRAMEWORK OF STUDY

The original intention of the project was to undertake a full subjective information modelling exercise over a six to seven month period. The proposed activity work plan, including a critical path analysis is shown in Table 2. After some discussions with the Standing Committee on Health Manpower Training of the HHSC it was decided to increase the emphasis on event generation and to undertake this part of the study by way of group sessions rather than mail questionnaires. Subsequently, it was agreed to expand the event assessment phase and to eliminate the later stages (i.e. Activities 10 to 17 in Table 2). It should be recognised, however, that as the necessary information for these later tasks has been collected such a development could be readily undertaken.

The remainder of this chapter outlines the steps which were undertaken in the study. Detailed discussion of the approach and the findings are the subjects of later chapters. An indication of the total time to complete each major section is enclosed. Note that it was possible to undertake some tasks concurrently.

A. Preliminary Activities (1 month)

(i) Conduct a pre-test of the total project in a workshop situation in the A.C.T. Pertinent findings of this workshop are contained in Appendix 1.

(ii) Discuss with the Standing Committee an appropriate framework for selection of participants for the study.

(iii) Determine the members of the first sample, i.e. the event generation, using the sample frame.

(iv) Outline a tentative framework for processing and evaluating findings of event generation and assessment.

B. Preparation of Event Generation Seminars (1 month)

(i) Contact each of the health care personnel selected for participation in the event generation seminar and ascertain

willingness to participate in this and/or later phases of the project.

(ii) Set up venues for half-day event generation seminars in all capital cities.

(iii) Prepare a list of events from the findings of the pre-test for use in a pilot test of the event assessment procedure.

C. Conduct Event Generation Seminars (6 weeks)

(i) Outline aims of project.

(ii) Request participants to complete pilot event assessment, the results of which are summarised briefly in Appendix 2.

(iii) Undertake brainstorming/issue generation exercises.

(iv) Discuss the findings of the exercise with the participants.

D. Process Event Generation Information (1 month)

(i) Refine the framework against which issues and comments may be processed.

(ii) Extract all single concept ideas and issues from the written input of the issue generation.

(iii) Classify items in terms of the suggested framework. There were three types of items: issue which related to the uncertainty context or future health manpower and training environment (the focus of the study), issues which were in the form of policy recommendations and issues which related specifically to the present "problem" situation. Condensed statements of all findings are contained in this monograph.

(iv) Prepare a list of issues (events, trends and projections) for the event assessment exercise.

E. Event Assessment (2 months)

(i) Select participants for event assessment.

(ii) Conduct event assessment by way of a mail questionnaire.

(iii) Collect, code and process responses.

(iv) Relate findings to specific aims of project as specified by the HHSC; namely, as an input to the deliberations of the Williams Committee[1], to enable the Standing Committee to obtain some firm ideas of what Australian health care experts believe to be the more likely trajectories of Australian health care and, to answer a number of specific questions posed by the Committee.

[1] The Committee of Inquiry into Education and Training established by the Commonwealth of Australia under the chairmanship of Professor B.R. Williams (University of Sydney).

TABLE 2

PROPOSED ACTIVITY WORK PLAN

	Activity	Expected time to complete activity (weeks)
1.	Determine sample for event generation and decide on final sample.	2 *
2.	Prepare initial event list, print and mail questionnaire for event generation.	2 *
3.	Response to event generation.	2 *
4.	Analyse responses, prepare Event lists (for event assessment), print event lists, approval and acceptance by client (H.H.S.C.).	3 *
5.	Organise familiarisation seminars in some capital cities.	3
6.	Undertake half-day seminars and distribute the event assessment questionnaire.	2 *
7.	Response to event assessment.	2 *
8.	Preliminary analysis of event assessment	2 *
9.	Further analysis of event assessment, preparation of event assessment report.	4
10.	Prepare cross-event analysis, print questionnaires, approval and acceptance by client.	3 *
11.	Response to cross-event.	3 *
12.	Prepare policy generation and outcome questionnaire, discussions with client, print and mail.	4
13.	Response to policy generation.	3
14.	Analysis of policy alternatives, Report.	3
15.	Approval of policy alternatives and outcomes.	3
16.	Analysis of cross-event, generate scenarios, construct first set of causal models.	5 *
17.	Report on Phase 1 of Proposal A.	3 *

* Critical events.

CHAPTER 4

STRUCTURING THE STUDY AND SELECTING PARTICIPANTS

The aim of this Chapter is to outline the basic sampling framework adopted in the project.

Expert opinion polling, delphi and other related techniques have been subjected to criticisms because of the sampling procedures, or lack of such procedures, adopted by the investigators. As such it is important that the methodological basis of this aspect of our study be clearly and openly stated. First, the "population" from which the participants were selected is defined, second, the procedure for selecting participants for event generation is discussed and third, the principles of sample selection for event assessment are outlined.

Definition of population

By way of introduction, it needs to be stressed that the aims of the study are first, to seek some firm ideas of what Australian health care "experts" believe to be the more likely and more desirable (and undesirable) trends of health care in Australia over the next two decades and second, to use this information to assess future health manpower and training needs in Australia over that period. Given these objectives, the population for this study is defined to encompass those who have informed opinion about health care and training policies and those who have a significant probability of being able to influence the direction of health care and training during the next twenty years. Such a vague definition is extremely difficult to operationalise and it would be difficult to completely enumerate this population. On the other hand, it does suggest a broad class of people who are identifiable within the health care system, and we believe that it is possible and meaningful to roughly stratify this class - notwithstanding the fact that every individual has a different set of opinions and a different perspective of the future and that any stratification procedures is itself less then clear cut.

To some extent, however, one must be careful not to draw inferences which exceed the limitations of the proposed methodology, as Helmer (1977) observes:

> "A Delphi inquiry is not an opinion poll, relying on drawing a ranom sample from 'the population of experts'; rather, once a set of experts has been selected (regardless of how), it provides a communication device for them, that uses the conductor of the exercise as a filter in order to preserve anonymity of response."

This, however, is insufficient reason to ignore fundamental principles of survey design in this form of social survey research.

Participants for Event Generation and Event Assessment pilot test

Event Generation is primarily an exploratory search for relevant issues for subsequent assessment. As with any survey design the input may come from a variety of sources or be prescribed by the client or analyst. It is axiomatic that in this study specific information for use in the event assessment questionnaire was to be collected from a sample of health care personnel.

Three broad criteria for selecting such personnel were adopted: first, it was felt necessary to be able to identify possible geographical (in particular, state) influences and differences, second, it was believed important that major interest groups in the policy process - health administrators, health professionals and health educators and researchers - be represented and third, it was thought to be desirable to include in the sample people in positions of influence in determining health policy.

Given those criteria, the people approached to participate in this aspect of the study were selected by State members of the Health Manpower and Training Standing Committee of the HHSC and the sample was adjusted for balance, breadth and variety of outlook by ourselves (the researchers).

The HHSC used a structural classification to stratify the population, and selection within the cells was based on Committee members' knowledge of participants in these areas. The areas were:

(i) Organised medicine and organised health professionals;
(ii) Universities;
(iii) Education authorities;
(iv) Organised labor in health;
(v) Hospitals (stratified by size and category);
(vi) CAEs;

(vii) State Health Authorities;
(viii) Private Practitioners;
(ix) Community Health Services;
(x) Consumers;
(xi) Industrial Relations Personnel;
(xii) Politicians, and
(xiii) Federal Public Servants.

Our own classification was a functional one and selection, in addition to those selected by the HHSC, was based on lists of professionals and registered health organisations. The classification scheme we adopted and used throughout the study is as follows:

(a) Practitioners -
  (i) medical;
  (ii) nurse;
  (iii) other, i.e. general paramedical, dentist.

(b) Education and Research -
  (i) hospital teaching only;
  (ii) university (teaching, research and practice);
  (iii) CAEs;
  (iv) primarily medical research.

(c) Administrators -
  (i) health care institutions, e.g. hospitals, health centres;
  (ii) government departments of health and health authorities;
  (iii) government department of education and education authorities and boards;
  (iv) professional organisations/associations.

(d) Other -
  (i) social "experts" (university and non-university);
  (ii) politicians;
  (iii) other.

As the objective of the brainstorming or event generation exercise is to generate ideas it is neither necessary nor desirable to select random samples. Coverage or scope and diversity of opinion are the main

selection criteria at this stage, and details of the sample are shown in Tables 3 and 4.

Participants for Event Assessment

Two general approaches were adopted to select participants and as such there are two "distinct" samples, referred to as Sample 1 and Sample 2.

Sample 1:

The aim was that the first group should be selected from those health professionals, health educators and researchers, health administrators and social experts who by their personalities and abilities have risen to positions of responsibility within their respective organisations. The criteria for selection, i.e. knowledge of future developments and their impacts and influence within the system, are virtually impossible to operationalise. As a result we have derived, as priori, a sample frame which reflects our perceptions, and the perceptions of a small group with whom we consulted, of the relative knowledge, influence and importance in policy making of the respective groups. It is not possible, nor intended, to claim that the sample is statistically random. It is, however, fair to comment that the sample is representative and does contain members of all major groups, associations and professions involved in the delivery of health care in Australia.

There are three stages in the selection of participants of the first and primary group. Brief comment is offered on each stage. First, it is assumed that the sample should be stratified by states and weighted approximately proportionally to population size. The usual sampling problem of minimum critical sample size requires that the small states be over sampled and the large states undersampled although the final weighted estimates will reflect the "true" situation. The framework is shown in Table 5. The proposed sample size, of some 300 has been selected so that differences in average estimates of the order of 0.1 may be identified. (The results of a series of pilot tests of event assessment procedures suggest that the standard deviation of an estimate of the average probability of occurrence of an event ranges from 0.05 to 0.30 and thus with a sample of n=300 the standard deviation of the mean ranges from around 0.005 to 0.02).

Second, the sample seeks to reflect opinions of four broad classes of personnel: health care practitioners, health educators and researchers,

TABLE 3

EVENT GENERATION SAMPLE INFORMATION

State*	Invited to Participate	Number Attended Seminar	Percentage
N.S.W.	63	21	33%
Vic.	54	24	44%
Qld.	43	14	33%
S.A.	48	22	46%
W.A.	41	19	46%
Tas.	43	12	28%
N.T.	36	19	50%

* There was no event generation seminar conducted in the A.C.T. but the pre-test, which included an event generation component, was conducted in Canberra.

TABLE 4

EVENT GENERATION - DETAILS OF ACTUAL PARTICIPATION

(a) Classification of Participants

State/ Territory	Practitioners	Educators	Administrators	Other "Social Experts"	Total
N.S.W.	12	1	7	1	21
Vic.	8	4	6	6	24
S.A.	6	7	7	2	22
Qld.	2	4	3	5	14
Tas.	2	2	7	1	12
W.A.	5	7	6	1	19
N.T.	10	2	4	3	19
Total	45	27	40	19	131

(b) Further Details of the Functional Classification

Practitioners*	Number	Administrators*	Number
Medical	11	Health Care Institutions	16
Nurses	10	Government Departments of Health	20
Other	24	Government Departments of Education	4
Total	45	Total	40

Educators	Number	Other	Number
Hospital Teaching	3	Social "experts"	18
University	9	Politicians	1
C.A.Es	14		
Medical Research	1		
Total	27	Total	19

*Representatives of associations were classified within their professional grouping at this stage.

TABLE 5

STATE REPRESENTATION OF PARTICIPANTS FOR EVENT ASSESSMENT - SAMPLE 1

State	Population (%)	Participants Approached	Percentage of Participants Approached	Actual Sample (Responded)*	Percentage of Actual Sample
N.S.W.	36	54	18	28	17
Vic.	27	46	15	25	15
Qld.	15	37	12	21	13
S.A.	9	37	12	26	15
W.A.	8	36	12	16	10
Tas.	3	29	10	15	9
A.C.T.	1.5	37	12	24	14
N.T.	.5	29	10	13	8
Total	100	305	(101)	168	(101)

* Responded and completed or at least partially completed the questionnaire. There were an additional 27 respondents who declined to participate in the study.

There is no statistically significant difference between the actual response distribution and the expected distribution given that response is proportional to number approached.

health administrators and social experts and relevant political personnel. Our arbitrary allocation of personnel across the sample is shown in Table 6.

Third, within each of these broad classes an attempt has been made to further stratify the sample into particular professional work groups. It should be stressed that this classification is imprecise and certainly poses allocation problems in that the cells are not perfectly mutually exclusive. It should also be noted that whilst the politician is ultimately responsible for legislation we believe that knowledge about the health care system and the possible trends and developments is primarily located within the amorphous "mass" of health care professionals.

Even at this disaggregated level it is still impossible to select the sample in a purely statistically random fashion. We have sampled organisations, professional lists, telephone directories, university and college handbooks, registration boards and the like in accordance with the above criteria. We do not pretend that the final sample is random but would claim that it is representative and that the findings may be used, at least as a first approximation, to identify what are perceived by a number of Australia's senior health professionals to be possible future developments of the health care system. Details of the actual sample size are contained in Table 7.

Clearly there are other groups whose members may have opinions which are more varied but nevertheless may influence or form the basis for future policy. Members of the groups are included in a second and separate sample "selected" by way of public invitation. No attempt is made to constrain the composition of this group. As such it includes a broad spectrum of health care users and interested persons.

Sample 2:

The approach adopted to select this second sample was to advertise in the national press for interested groups to participate and to place advertisements on ethnic radio stations. It is important that all interested groups and individuals be given the opportunity to participate and provide insights and opinions. It is also a way of involving the general public, although most responses came from various professional groups and associations. It should be stressed that responses from this group were processed separately from the main sample but statistical testing revealed that there were no significant differences between the

TABLE 6

FUNCTIONAL REPRESENTATIONN OF SAMPLE I

Class	Hypothesised "Ideal' Proportion of Sample	Participants Approached		Actual Response*	
		Number	Percentage	Number	Percentage
Health care practitioners	0.30	87	29	46	27
Educators and researchers	0.30	74	24	38	23
Administrators	0.30	111	36	70	42
Social and political experts	0.10	33	11	14	8
Total	1.00	305	100	168	100

*There is no statistically significant difference between the actual response distribution and the expected distribution given that response is proportional to number approached.

TABLE 7

DETAILED SAMPLE SCHEME FOR EVENT ASSESSMENT - SAMPLE I

Category	Sub-Category	Participants Approached		Actual Respondents	
		Number	Percentage	Number	Percentage
A. Health Practitioners	Medical Practitioners	38	44	12	26
	Nurses	19	22	11	24
	Other health professionals	30	34	23	50
	Total A:	87	100	46	100
B. Educators & Researchers	Hospital and teaching staff*	2	3	2	5
	University staff	44	59	23	61
	CAE health care personnel	24	33	13	34
	Primarily medical research	4	5	0	0
	Total B:	74	100	38	100
C. Administrators	Hospital, health centres & health care institutions	50	45	26	37
	Government Departments of health or health authorities	49	44	38	54
	Government Departments of Education**	1	1	0	0
	Professional Organisations	11	10	6	9
	Total C:	111	100	70	100
D. Social and Political	Academic sociologists, economists	27	82	12	86
	Other	3	9	-	0
	Politicians***	3	9	2	14
	Total D:	33	100	14	100

* Most educators in fact do not belong to this sub-category.

** The small number of people approached were in fact on secondment from a health department or commission.

*** All Ministers for Health and Shadow Ministers were invited to participate in the study. Those approached represent the number who agreed to participate in this phase of the study.

two sets of average responses. As such, the findings were amalgamated with those of the first group. Table 8 provides details of this group of participants (referred to as Sample 2).

A final issue is that of non-response. Unfortunately the elaborate procedures to maintain anonymity mitigate against any successful telephone, field or mail follow-up. The extent of non-response bias is, therefore, unknown and virtually impossible to estimate.

TABLE 8

PUBLIC INVITATION PARTICIPANTS FOR EVENT ASSESSMENT - SAMPLE 2

(a) State Distribution

State	Replied to the Advertisement	Completed a Questionnaire
N.S.W.	17	13
Vic.	21	11
Qld.	3	3
S.A.	2	1
W.A.	–	–
Tas.	2	2
A.C.T.	2	–
N.T.	–	–
Total	47	30

(b) Professional Distribution

	Replied to the Advertisement	Completed a Questionnaire
A. Health Practitioners	15	10
B. Educators & Researchers	2	2
C. Administrators	16	9
D. Social & Political (including consumers)	14	9
Total	47	30

CHAPTER 5

EVENT ASSESSMENT AND EVENT GENERATION

Event Generation

The first phase of the study was to conduct workshops in all capital cities to generate possible future issues and changes thought to be of significance for health manpower and training over the next two decades. This phase of the subjective modelling approach is critical for the success of later stages. A face to face group situation was used in preference to either a structured or unstructured mail questionnaire format as it is imperative that participants be adequately briefed, understand the task to be performed and be motivated to provide input. A detailed discussion of the pros and cons of alternative approaches to structuring group sessions is contained in A.L. Delbecq et al (1975).

Event generation may be discussed in terms of first, the event generation pre-test seminar, second, the aim of the workshops in the capital cities, third, the selection of participants, fourth, the venue of workshops, fifth, the conduct of the workshops and sixth, the findings.

Event Generation pre-test seminar

As part of a series of policy evaluation seminars conducted for the Centre for Continuing Education, A.N.U., it was possible to test out the various steps in the methodology in terms of an exercise on Health Manpower and Training Needs.

In this exercise the aim was to expose participants to an approach to evaluation and not specifically to solve a problem. The event generation aspect of the seminar was undertaken in small interacting groups - the intention being to encourage open discussion and involve all members. This method of idea generation was assessed as being inappropriate for the major sessions. First, it allowed individuals to control, dominate or determine the direction of the discussion, second, it disadvantaged participants who were not prepared, or were reticent to engage in vocal dialogue and third, it allowed for a large degree of influence in terms of ideas to be included or rejected. The approach which was adopted is based on the nominal group technique outlined by Delbecq (1975).

The findings of this preliminary workshop are included in this report (Appendix 1) and many of the lessons learnt have been used to improve the actual application of the subjective modelling method. The most significant direct input to the other sessions was a list of issues and events deemed to be significant by the pre-test participants. This provided an initial prime for the event generation workshop participants and the results are shown in Appendix 2.

Aim of the event generation workshops

The aim of the workshops was to collect Australia-wide information from participants in the health care system about:

- current and future problems in the health care system;
- perceived trends (technological, social, attitudinal, professional, etc.);
- changes in professional and social attitudes; and
- any other future developments which were thought to be relevant to health manpower and training over a twenty-year time horizon.

The information collected at the workshops was used to identify possible futures for health manpower training in Australia against which health educators, practitioners and administrators can develop and evaluate alternative strategies for the education and training of health care personnel.

Selection of participants

The objective, as stated in Chapter 4, was to involve a wide cross section of people with knowledge of the health care field. Some were in a position to influence health care policies and others offered comments about likely developments and changes as they perceived them. The functional classification outlined in the previous chapter was used as a guide to participant selection.

Health and social professionals were invited to participate in seminars which were scheduled to last for about three hours. A general letter of invitation which was sent to those health care personnel who were approached is contained as Appendix 3. Although there is no substantial evidence on optimal group size for face-to-face encounter

sessions it was found that some fifteen to twenty participants was a manageable size with which to work.

Venue of workshops

The search for venues in the various capitals proved to be an exacting task and one which would not have been possible without the support of state health personnel. The venues actually chosen are shown in Table 9.

Conduct of the workshops

Each workshop was conducted over a three hour period with a program similar to the following:

(i) Introduction, explanation of problem and approach to be used (30-40 minutes).

This session was primarily to introduce participants to the problem, the approach and the overall aims of the research. It was found that many people did not understand the nature of the contract research program established by the HHSC and were uncertain, at the time of arrival, as to the intentions of the researchers. There was also a healthy scepticism among some participants about the value of any further health manpower planning either at the national or state levels.

(ii) Trial Event Assessment (15-20 minutes)

Some twenty-eight events were selected from the findings of the Canberra workshop. This set of events served not only for illustrative purposes but also provided a control in relation to the subsequent proposed event assessment, in that responses from the workshops could be compared with the assessments from an augmented list of participants invited to complete the mail event questionnaire.

This trial assessment illustrated the purpose of event generation and the problems and difficulties of event statement formulation. The responses provided preliminary information from which differences among the various groups of participants could be assessed.

TABLE 9

WORKSHOP VENUES

City	Venue	Date
Sydney	Carslaw Lecture Room, University of Sydney	26 August 1977
Melbourne	Clunies Ross Memorial Foundation, Royal Parade, Parkville	24 August 1977
Brisbane	The Executive Building George Street	10 August 1977
Adelaide	Eden Park Training Centre, The Crescent, Marryatville	17 August 1977
Perth	Perth Medical Centre, Verdun Street, Shenton Park	15 August
Hobart	Royal Hobart Hospital	22 August 1977
Darwin	Department of Health Conference Room, Smith Street	23 September 1977

(iii) Individual Event Generation (30-45 minutes)

Participants were now at a stage where they were aware of the aims of the study and had assessed a small number of general events. They were then given a prompting chart (see Table 10) and asked to record on paper their perceptions of the future. As some care had been taken to invite people from a multitude of health related disciplines it was stressed that the input of prime value was that which individuals could offer as a result of their position in and perspective of the health care system, as it related to their discipline. It was realised that this is a difficult but critical step in the approach hence a number of alternative complementary ways of formulating the task were suggested. In addition to verbal representations, pictorial displays were also offered. In Table 11 for example, the aim was to influence participants to contemplate those issues which were both future oriented and outside the health manpower training system but of relevance to the system if they occurred. No attempt was made to coerce participants in any way and consequently much of the information related to both present problems which were estimated would continue and possible alternative training strategies which could be adopted. This information, although not the prime aim of the session, provided a useful input for a general discussion with participants on perceived current problems in the health care system and possible adaptive strategies for health manpower and training. The findings have been processed and are included in this monograph.

During this idea generation phase, discussion with neighbours "buzzing" was encouraged to stimulate thinking. In addition, it was hoped that by having a wide cross section of participants, each of whom was briefed to look at aspects of the future relevant to their own areas of expertise, the exercise would produce a considerable array of useful input on large number of health and health related issues.

(vi) Group Discussion (60-75 minutes)

After a short coffee break, participants were randomly allocated into two groups, each under the supervision of one of the researchers, and a round robin approach was adopted to discuss

TABLE 10

PROMPT CHARTS FOR EVENT GENERATION

(i) Possible Structure for Idea Generation

1. Economic/Political/Administrative/Legal.
2. Social/Attitudinal.
3. Professional and Industrial attitudes.
4. Practice of health care.
5. Training/Education for health care.
6. Technology of health care.
7. Other, e.g. International.

(ii) Aspects to consider within the framework

1. Problems or difficulties < current / future
2. Perception of trends < existing / new > changes
3. Events which < might / might not / should / should not > occur.
4. Possible future developments and changes.

(iii) A way of thinking about the study

1. What is wrong now?
2. What do you see as likely future developments?
3. What do you see as desirable future developments?
4. Write a future oriented history i.e. It is now 1995, describe the health care system as you see it, OR
5. Prepare a judgemental forecast. It is now 1978, describe the health care system as you believe it will be in 1995.

TABLE 11

FRAMEWORK FOR EVENT GENERATION PROCESSING

Future Oriented Information

- Level of total expenditure.
- Financial control and accountability < State/Federal / Private/Public Insurance
  Program Evaluation;
  Efficiency and Effectiveness
- Degree of nationalisation (salaried vs. private)
  Staffing and Operation
- Mode of health care delivery (institution vs. community health care centres).
- Roles of health professionals (paramedicals, doctors, personnel mix).
- Community use, demand, expectations and attitudes to health.
- Emphasis (focus) of health effort (curative, preventive; rural and city; migrant, aboriginal).
- Technological developments.
- Structure of workforce (male vs. female).
- Political.
- Legal (retraining, etc.).
- Ethical.

Other

- training strategies, alternative policy options for health manpower.
- Current issues and problems.

the findings generated in (iii). This provided the members of the seminar with a chance to interact and discuss issues with their colleagues. It also provided the analyst with a further source of information as many new ideas were generated at this stage. The decision to encourage and promote discussion after the initial brainstorming was intentional. It was an attempt to minimise the influence of dominant members of the group and to maximise the chance that all participants would contribute.

The discussion demonstrated that perceptions of both current problems and future trends by various health personnel differ drastically in terms of nature, cause, magnitude and direction of impact. Choice of appropriate strategy to develop and least cost options to recommend were also the subjects of considerable diversity of opinion.

The findings of the sessions were then collected and processing was undertaken in Canberra.

Findings of Event Generation Seminars

The detailed input from each seminar participant was processed and transformed into a set of general event statements. These were classified roughly into, first, those events and issues which related to the uncertainty context in which health manpower and training policy is being developed - the specific focus of event assessment, second, current issues and problems in the health care system and third, possible training strategies. Categories two and three, whilst being extremely interesting and relevant to the total project, are not the stated concern of the event assessment exercise. The information has, however, been analysed and the results are included in this report.

An attempt was made to classify the processed information into discrete event statements i.e. that an issue would either occur or not occur by the end of the time period. It was found that the concept of event did not capture the richness of the subjective information. As such two other categories were included - trends and projections and brief definitions of the three classes (events, trends and projections) are offered below. A more detailed description is contained in Chapter 2.

An event is defined as an outcome which may occur within the stated time period of two decades or a situation which may exist at the end of

the period. A trend is defined to be an aspect or characteristic of the situation which may change in magnitude over the period but for which no precise measurement has been found. A projection is defined to be an aspect or characteristic of the situation which may change in magnitude over the period and for which the amount or level of the change can be approximately "quantified".

A list of the events, trends and projections which have been extracted and were processed in the event assessment are contained in Appendix 4. Current problems as perceived by participants and proposed training strategies are the subjects of discussion in later chapters.

The significance of event generation is that information has been extracted from a wide cross section of members of the various professions in the health care field. The discussion which accompanied the event generation seminars proved a valuable forum for cross-fertilisation of ideas among these professionals. Although our list provides a general rich picture of the situation, many specific items have been omitted at this stage as they appeared to be inappropriately detailed given the broad context of the study.

Event Assessment

The conceptual framework for event assessment follows that outlined in Chapter 4. Those invited to participate were sent a list of issues for evaluation (Appendix 3), a set of instructions (Appendix 4) and a questionnaire to complete (sample pages of which are contained in Appendix 5).

The questionnaires were distributed during November, 1977 and replies were collected during December and coded during January and February, 1978. Details of participation rates are shown in Chapter 4. The overall participation rate was 56%. The response rate was somewhat higher as a number of people replied but declined to participate (8), some had changed addresses and were not easily contactable, e.g. overseas (6) and others were away during the survey period (9). Thus, the overall response rate was 63%. The inability to incorporate any follow-up procedures, because of the emphasis on anonymity of response, may have contributed to the relatively low response rate.

A summary of the findings are contained in Chapter 6 and the three subsequent chapters contain a detailed discussion of information collected from the event generation seminars, information analysed from the event assessment and policy suggestions for health manpower and training needs, respectively.

CHAPTER 6

GENERAL FINDINGS OF STUDY

The remainder of this report contains the general findings of the study and some interpretive comment is offered. In Chapter 7 an attempt is made to outline the broad problems in the present health care system as perceived by the participants in the event generation seminars. In Chapter 8, the findings of the event assessment are evaluated in terms of the theme of the study - health manpower and training needs over the next two decades. Policy initiatives for health manpower and training, suggested at event generation seminars, are discussed in some detail in Chapter 9. Finally, a critical evaluation of the approach to analysis is outlined in Chapter 10, in which the difficulties discussed are those proffered by participants in the event assessment mail questionnaire.

The issues contained in the event assessment study have been grouped in appropriate ways for the discussion in Chapter 8. However, in order that this report may be used in general health care planning a complete listing of all of the issues is included in this Chapter. This listing contains the overall assessment of the major characteristics. Table 12 contains the set of events and for each event the average probability of occurrence, the average desirability of occurrence and the average weighted impact measure. In Table 13, the set of trends are included; each trend being accompanied by the measure of average movement and a measure of the desirable direction of movement (as assessed by the participants). Table 14 contains the average "low", "likely" and "high" estimates for each of the projections.

The assessments have also been analysed by professional groupings, namely, health practitioners, health educators, health administrators and others (social "experts" and representatives of consumers). A complete listing of all

information derived from the analysis for each professional grouping and for the population as a whole is contained in Appendix 6. For events, there are a number of respondents, averages, standard deviations and rankings (1-99) for the four basic or primary measures probability, confidence in probability estimate, significance and desirability and similar details for the desired measure, impact. For each trend, frequency distributions of direction and magnitude of movement and desirable movement are computed. In the case of the former measures an average measure of movement and a standard deviation are computed for each trend and in the case of the latter an average directional desirability measure is calculated. Finally, for each projection an average and standard deviation is computed for the low, likely and high estimates.

TABLE 12

EVENT ASSESSMENT SUMMARY

No.	Events	Probability[2]	Desirability[1]	Impact[2]
1.	Reduced working hours by health professionals results in a restriction of availability and accessibility of health services.	.56	-.45	.28
2.	Present health insurance replaced by universal health insurance financed by income tax levy.	.57	.13	.23
3.	Health care professionals oppose consumer participation in health care planning and operations.	.61	-.35	.28
4.	Salaried health services are principally hospital based.	.57	-.13	.26
5.	Fee-for-service system resists external evaluation of any kind, e.g. private doctors refuse to be accountable to governments.	.65	-.52	.36
6.	Severely handicapped people will cease to be regarded as a family or individual responsibility.	.61	-.05	.29
7.	Community attitudes to health remain illness oriented, demanding mainly curative services.	.63	-.56	.37
8.	Establishment of day care centres linked to small community hospitals.	.71	.53	.35
9.	The community accepts registered professionals other than doctors for primary health care.	.67	.44	.38
10.	Group collectives funded to run health services on a self-help basis.	.46	.18	.15
11.	Inexpensive, motel-type 'para-hospitals' for ambulatory and convalescing patients will handle at least half of all those requiring care in an institution (excluding mental patients).	.54	.50	.25
12.	Legal responsibilities of health professionals defined.	.72	.53	.37
13.	Cost-effective considerations influence the decision on the access of individuals to expensive health services. That is, patient need or medical considerations cease to be the only criteria for such decisions.	.63	.00	.34

.../47

No.	Events (cont'd)	Probability[2]	Desirability[1]	Impact[2]
14.	Community nurses are given and accept responsibility for performing medical treatments, i.e. nurse uses judgement as to when a referral to doctor, etc. is necessary.	.73	.45	.41
15.	Introduction of regular re-registration.	.66	.54	.36
16.	Evidence of post-graduate training a mandatory prerequisite for re-registration.	.59	.39	.31
17.	People from ethnic minorities (e.g. aboriginals and migrant groups) are trained to provide health services to those groups.	.70	.58	.37
18.	There will be significant involvement of the consumer in decisions effecting the provision of health care.	.61	.41	.29
19.	Private practitioners trade hours of work for increases in gross income. That is, they choose to do less work rather than earn higher gross income.	.64	-.10	.31
20.	Peer group cost-efficiency reviews by health professional groups.	.63	.50	.32
21.	Financial incentives are used extensively to encourage medical practitioners to areas of under-supply.	.65	.35	.29
22.	Home visit system substantially replaces the existing institutionally based outpatient system.	.36	.03	.15
23.	Individuals who need health services will continue to expect the best possible treatment regardless of cost.	.84	.08	.49
24.	Outpatient clinics established outside hospital complexes.	.64	.33	.31
25.	Computerised health records will be held centrally with privacy safeguards.	.70	.35	.36
26.	Working conditions (hours of work, health hazards, etc) will become a major industrial issue for health professionals.	.67	.07	.36
27.	Increased emphasis on the cost-efficiency of health services leads to a reduction in resources allocated to health services with outcomes which are difficult to measure. For example, services for which there are long term effects such as health education and preventive services, and services promoting mental and social well-being.	.62	-.37	.34

.../48

No.	Events (cont'd)	Probability[2]	Desirability[1]	Impact[2]
28.	Indemnity insurance becomes a major cost item, e.g. in some American States private practitioners pay 25% of salary for insurance.	.60	-.57	.26
29.	Aspiration for higher salaries/status for some professions (especially nursing) will lead to fewer jobs for these professionals.	.59	-.37	.28
30.	Medication records systems established to monitor drug intake of individuals.	.61	.40	.27
31.	Emergence of coordinated mental health care teams.	.73	.58	.39
32.	Establishment of "centres of excellence" in health education.	.57	.34	.27
33.	Method of health care delivery for different health programs determined on a cost effectiveness basis rather than by traditional medical roles, for example, different health teams are appropriate for infant welfare programs, school medical service, general community health, intensive hospital care, health education, and ill health prevention.	.65	.37	.32
34.	Medical practitioners used to lead health care teams.	.68	.09	.32
35.	Health studies becomes recognised discipline in secondary schools.	.69	.62	.33
36.	Medicines such as analgesics and indigestion remedies restricted to pharmacies.	.60	.41	.27
37.	Registration of the major health professions remains a State rather than Federal responsibility.	.64	-.16	.25
38.	There will be common initial education of two years for all health professionals followed by specialised training.	.42	.18	.17
39.	Development of group occupational health centres.	.60	.37	.22
40.	Salaried system proves inappropriate for dental services.	.45	-.20	.14
41.	Powerful health consumer groups will develop.	.63	.12	.28
42.	General reviews and audits for health institutions.	.79	.65	.45
43.	Health records available to all registered health professionals without need for patient approval.	.43	-.29	.19

.../49

No.	Events (cont'd)	Probability[2]	Desirability[1]	Impact[2]
44.	Health records available to all registered health professionals nominated by the patient.	.72	.53	.37
45.	"Major health decisions will continue to be made mainly on the basis of idealogy and for immediate electoral advantage rather than on sound economic arguments."	.72	-.63	.39
46.	Travel costs for health care treatment incurred by rural dwellers included in health insurance schemes.	.60	.41	.22
47.	Rotational system among health care professionals adopted to provide health services in remote outback areas.	.56	.45	.25
48.	Multidisciplinary health care develops primarily in community health centres.	.69	.44	.38
49.	Cost effective considerations form the basis of capital works allocations in health.	.62	.39	.30
50.	Registered paramedical personnel act as first contact practitioners.	.62	.30	.32
51.	Emergence of privately financed community health centres.	.53	.08	.19
52.	Programs of education and community self-support implemented in remote rural areas.	.63	.55	.28
53.	There will be a compression of the salary scale differentials in the health care field.	.55	.22	.22
54.	Health care services monitored and evaluated at regional levels.	.71	.53	.36
55.	Health care of a defined population to be the responsibility of an individual or specified group of health professionals, e.g. introduction of health maintenance organisations.	.52	.26	.21
56.	Private sector proves to be more cost effective in providing health care than the public sector.	.54	.03	.25
57.	Significant technological breakthrough in telecommunications and telemetering, e.g. so as to allow remote diagnosis and monitoring.	.73	.49	.34
58.	Emergence of community health nurse trained in social medicine.	.76	.58	.42

.../50

No.	Events (cont'd)	Probability[2]	Desirability[1]	Impact[2]
59.	Recurrent or continuing education becomes an accepted part of the careers of all health professionals.	.79	.79	.51
60.	Significant technological breakthrough in patient transport services, i.e. ambulance, air transport, etc., possibly with intensive care.	.70	.57	.35
61.	There will be financial sanctions for people who choose ill health life styles, e.g. smokers, heavy drinkers.	.41	.14	.16
62.	Redistribution of duties within the nursing workforce results in reduced demand for professional nurses.	.49	-.14	.22
63.	Hospitals designed to deal with acute medical cases only, i.e. trend towards non-hospital based services.	.69	.50	.39
64.	Non acceptance of "diploma" professionals by degree trained professionals.	.52	-.43	.21
65.	Legislation introduced compelling individuals to participate in many preventive programs, e.g. annual check ups, screening for cancer.	.35	-.10	.13
66.	Malpractice suits heard by normal court system.	.63	.19	.21
67.	Malpractice suits heard by lay tribunals.	.30	-.42	.08
68.	Malpractice suits heard by peer groups.	.47	-.08	.16
69.	Rejection of reliance on technological solutions to health problems, i.e. a greater emphasis on personal, human care and the "art" instead of the "science" of medicine.	.48	.24	.23
70.	The community will regard the quality of care in the salaried medical service as inferior to that in private practice.	.51	-.51	.24
71.	Self help programs for health maintenance are developed.	.68	.61	.33
72.	Self help programs for curative services are developed.	.53	.24	.22
73.	Substantial increase in demand for dental services caused by the inclusion of dental benefits in basic or levy health insurance.	.67	.27	.31
74.	The introduction of new technological developments will be subject to strict cost-benefit criteria.	.64	.45	.34

.../51

No.	Events (cont'd)	Probability[2]	Desirability[1]	Impact[2]
75.	Widespread use of paramedicals results in a decline in the standard of patient care.	.30	-.42	.14
76.	Significant breakthrough in rehabilitation technology, i.e. in the maintenance of independence of the chronically ill and disabled.	.54	.68	.26
77.	No shortage of recruits for health professions.	.75	.37	.43
78.	Continuation of the relative scarcity of medical manpower in rural areas.	.67	-.63	.34
79.	All major nurse education moves to Colleges of Advanced Education.	.69	-.03	.39
80.	Consumers compile directories of health services which contain details of location, availability and type of service.	.70	.49	.30
81.	Health planning and administration undertaken mainly by non-health professional personnel.	.51	-.33	.24
82.	Professional registration mitigates against successful multi-disciplinary team approach to health care, i.e. obliges people to work in narrow frameworks.	.44	-.52	.18
83.	Health education becomes part of basic primary education.	.71	.66	.36
84.	Health care diagnosis becomes less judgemental, i.e. more mechanised.	.65	-.05	.31
85.	Clinical encounters reoriented to emphasise prevention as much as cure.	.63	.71	.35
86.	Mass media used for health education.	.74	.63	.39
87.	Government introduces a medical audit to control activities of health professionals (i.e. quality and efficiency).	.63	.30	.30
88.	Fee-for-service will be replaced by health maintenance organisation.	.40	.11	.16
89.	Health care system makes increased use of "aide" type categories.	.75	.35	.40
90.	Health records will be computerised.	.81	.44	.47
91.	Free occupational health services provided by employers.	.59	.49	.23
92.	Formal links established between solo practitioners and community health centres.	.68	.61	.34

.../52

No.	Events (cont'd)	Probability [2]	Desirability [1]	Impact [2]
93.	As the proportion of aged grows the health care system will provide them with less care but nonetheless an increasing proportion of total health care costs.	.59	-.43	.27
94.	New health problems caused by general environmental deterioration.	.68	-.64	.36
95.	The academic criteria for admission to medical schools will be modified by criteria based on motivation and personality.	.56	.52	.28
96.	It will be established that all patients have the right to know their medical diagnosis, prognosis and proposed treatment.	.69	.52	.35
97.	Health professionals will organise strong militant unions.	.66	-.19	.33
98.	Appropriate, legislation gives some health professionals other than doctors, limited powers to prescribe drugs, e.g. community nurses and pharmacists.	.58	.16	.24
99.	Health care institutions organise to accept permanent part time health staff including shared jobs.	.71	.46	.33

1 Ranges from -1 to +1

2 Ranges from 0 to +1

.../53

TABLE 13

TREND ASSESSMENT SUMMARY

No.	Trends	Average Movement[1]	Desirable Movement[2]
1.	Government involvement in health administration and planning.	.75	.52
2.	The proportion of health costs met directly by the consumer, i.e. the gap between payment and rebate.	.19	-.06
3.	Role of local government authorities in the control and coordination of health services.	.16	.27
4.	Dual funding, i.e. Joint Federal and State control of health care.	.22	.05
5.	Public sector health expenditure as a proportion of budget.	.48	.28
6.	Medical research funding from all sources as a proportion of gross domestic product.	.14	.70
7.	Percentage of general practice which is fee-for-service.	-.07	-.29
8.	Percentage of health professionals who are salaried.	.50	.57
9.	Percentage of married women health professionals returning to workforce as soon as possible after child bearing.	.56	.52
10.	The rate of development of medical technology.	.61	.46
11.	The level of political and bureaucratic control of the health care system.	.64	-.43
12.	Malpractice suits against individual practitioners.	.51	-.24
13.	Demand for domiciliary services.	.68	.74
14.	Level of "institutionalisation", i.e. extent to which care is located in hospitals (as opposed to homes, community health centres).	-.10	-.77
15.	Psycho/behavioural/social disorders.	.65	-.84
16.	Proportion of treatments for psycho/social disorders performed by registered professionals other than GPs.	.60	.60
17.	Individual responsibility for own health.	.25	.88
18.	Acceptance and use of natural food diets.	.29	.54

.../54

No.	Trends (cont'd)	Average Movement[1]	Desirable Movement[2]
19.	Prescribed drug taking (in proportion to population).	.25	-.80
20.	Non prescribed drug taking (in proportion to population).	.46	-.86
21.	Road accidents (in proportion to population).	.39	-.91
22.	Crime and violence (in proportion to population).	.59	-.96
23.	Financial sanctions for services given other than in normal working hours.	.41	-.19
24.	Length of stay in hospital.	-.38	-.74
25.	Hospital size (new hospitals).	-.12	-.42
26.	Degree of specialisation in hospitals.	.52	.14
27.	Relative demand for expensive hospital services.	.44	-.50
28.	Emphasis on "community care", provided by the community for the community.	.44	.81
29.	Acceptance by the community of community health centres.	.62	.85
30.	Variety of services offered by community health centres.	.61	.85
31.	Interdisciplinary team delivery of care.	.57	.91
32.	Group practices supported by private paramedical staff.	.41	.60
33.	Institutional care for mentally retarded.	.00	-.12
34.	Role of the pharmacist in prevention and correction of drug misuse.	.40	.80
35.	The coherence of the family unit, i.e. will it increase to reach the extended family concept or decrease requiring social support for children.	-.22	.68
36.	Social status of doctors.	-.32	-.42
37.	Proportion of elderly people cared for in non-institutional environment (i.e. not in hospitals or old people's homes).	.28	.57
38.	Specialisation amongst health care professionals.	.47	.00
39.	Proportion of health care resources allocated to rehabilitation.	.39	.84
40.	Proportion of health care resources allocated to domiciliary care.	.45	.91
41.	Proportion of health care resources allocated to community health services.	.54	.86
42.	Proportion of health care resources allocated to preventive health services.	.43	.90
43.	Proportion of health care resources allocated to health education.	.36	.88

.../55

No.	Trends (cont'd)	Average Movement[1]	Desirable Movement[2]
44.	Proportion of health care resources allocated to health education in schools.	.37	.85
45.	Proportion of health care resources allocated to accessible community psychiatric facilities.	.36	.87
46.	Proportion of health care resources allocated to occupational health programs.	.31	.83
47.	Proportion of health care resources allocated to child care services.	.34	.72
48.	Proportion of health care resources allocated to handicapped (including accidents).	.37	.78
49.	Proportion of health care resources allocated to administration.	.37	-.27
50.	Acceptance of the role of paramedical staff by community medical practitioners.	.40	.92
51.	Size of health care workforce relative to total workforce.	.42	.29
52.	Paramedical services for disadvantaged groups.	.39	.79

[1] Range -1 to +1

[2] Range -1 to +1 ; + increase desirable
- decrease desirable

.../56

TABLE 14

PROJECTION ASSESSMENT SUMMARY

No.	Projections	Average Estimate Low	Likely	High
1.	Total cost of health service as a percentage of Gross Domestic Product (current value is approximately 6½%).	6.9	9.2	11.8
2.	Total cost of education as a percentage of Gross Domestic Product (current value is approximately 5½%).	5.5	7.0	8.8
3.	Percentage of women trained in traditionally male professions (1975 graduates in medicine and dentistry combined contained 23% female).	26.7	36.5	45.5
4.	Percentage of men trained in traditionally female professions, (1974 estimated workforce in nursing, physiotherapy and occupational therapy contained 4% males).	6.9	12.9	19.3
5.	Hospital accommodation per capita, i.e. bed ratios (current value is stated to be about 6.5 beds per 1000).	5.2	6.5	8.2
6.	Average length of stay in hospital (current value is estimated to be around 10 days).	6.3	7.9	10.4
7.	[1]Health services research expenditure as a percentage of total health care expenditure (current value is around .06%).	-	-	-
8.	[2]General practitioners/population ratio (current value is estimated to be around 1 doctor per 700 people).	553	682	881

1. Respondents had difficulty with the basic unit of measurement (.06%) and hence the results are not useful.

2. Some respondents pointed out that the ratio of "1 per 700" refers to "total number of doctors" not just "general practitioners". Those who based their response on the G.P. ratio (roughly 1 per 1400) and those who expressed their response as the inverse ratio (roughly .0014) were excluded from these analyses. About 14 respondents were involved out of about 160 who answered the question at all.

CHAPTER 7

CURRENT PROBLEMS IN HEALTH CARE

Although the focus of the study was health manpower and training needs over the next two decades, some comment was also offered by participants on the current climate in which health care resources are being allocated and utilized. The theme which emerges in one of high cost, inappropriate use and misdirection of resources. A major contributing factor is the lack of information both for the public on availability of health services and for decision makers concerned with planning and rationalising health services.

The issues raised during the seminars have been processed and are discussed within a general framework. Whilst an attempt has been made to distinguish among current problems, future changes and developments and policy initiatives or responses, the boundaries are not easily demarcated. As such there will be some overlap and some future developments may be merely manifestations of existing problems, for example, a critical shortage of physiotherapists within two decades may be imminent already. Current problems, as perceived by participants, are discussed as follows. First, the health care environment is considered in terms of (a) the social-political climate and (b) financial and economic characteristics. Second, some comment is offered on the training and qualifications of existing health professionals. Finally, present health services are discussed in terms of type of service, availability and usage of services.

Social-Political Climate

The major comment related to the "short-term quick result" planning syndrome advocated by politicians. Not only does this approach mean that many valuable projects are not commissioned but also it is accompanied by a stop-go attitude to health care. The obvious misallocations of resources, e.g. hospitals in marginal electorates, were raised. The major deficiency of such an ad-hoc approach to planning was seen to be the lack of political support for health promotion and prevention. It was argued that without a change in political attitude the present situation of a curative based system was likely to continue to the detriment of the user.

Important social dimensions of the present society included the concern with the increase in stress related disease, the increase in the number of one parent families and the increasing number of aged persons. It was felt that the present health training system and the existing resources were not sufficient nor appropriately directed to cope with these problems.

Financial-Economic Climate

Comment was directed towards cost of services and cost of training, method of payment of professionals and funding of programs. The acknowledgement that health costs, including costs of training health professionals, posed a major problem was frequently contrasted with comment on misuse of resources and lack of both personnel and facilities in many critical areas, for example, homes for the mentally ill and geriatric facilities. Within the public sector of the health care system the affect of seemingly arbitrary staff ceilings was considered to have some bearing on present recruitment and morale. The use of a one year funding program was also seen to be disruptive for planning and likely to result in inappropriate short-term allocations of resources.

Comments were divided on the desirability of a dual private and public funding system. There was concern, however, at the earning expectations of health professionals and the fee-for-item method of payment.

Health Professionals - Training and Qualifications

The health profession was portrayed as one in which there was a lack of coordination between professional groups and an increasing occurrence of demarcation disputes over health tasks. Insufficient determination of the roles of various professional categories was assessed as being a contributing factor to the latter issue. Much of the current legislation regarding professional responsibility was seen as being outmoded and thus in need of updating.

The most serious problem area was seen to be that of designing relevant training courses. The claims were made that, in general, health care training is not appropriate for the existing problems of society, that there are too many overtrained practitioners (e.g. too many surgeons) and that vocational training has not taken off because of

both a desire for high salaries and a lack of commitment by personnel, (for example, insufficient staff support from universities for vocational teaching).

A general comment was that there was a lack of skilled health administrators and that too much emphasis was placed on the medical qualifications of the administrators. Concern was also expressed at the lack of opportunities for training community health educators.

Health Services - Type, Availability, Usage

A predominant issue was that of the general inequality of the distribution of health services. Particular concern was expressed for non-metropolitan residents for whom it was argued the "market mechanism" did not work, for oppressed minority groups including migrants and Aboriginals, and for the general problem of caring for the elderly e.g. home verse institution.

Turning to the physical services, the broadest issue raised related to the problems of having a fragmented-curative-oriented health care service (rather than a coordinated preventive system). Specific items included cutbacks in after-hours services (because of high incomes), misuse of drugs by health professionals, mal-distribution of hospital beds, over use of health services by practitioners and community e.g. X-ray, pathology, and unnecessary referrals to specialists.

The basic problems of administering health services were also discussed. The macro problem was seen as one of lack of coordination at various levels in the system (region/state/federal) and between the various health services. Absence of planning for health staff and lack of uniformity for a wide variety of procedures contributed to the perceived problems at the operational level. Finally, the task of administering multi-disciplinary health care teams was seen to be extremely complex within the present system.

Much of the argument advanced in this Chapter supports increased level of involvement of government or at least "controlling bodies" to regulate the market. The alternative free market view in which the role of governments is to aid equity considerations not efficiency allocations was also expressed. Although one may be tempted to think

that the above problems may be solved, or at least alleviated in part, by an increase in health care expenditure, there is no evidence which suggests that either life expectancy or quality of life is increasing with increased expenditure.

CHAPTER 8

THE HEALTH CARE SYSTEM : 1980-2000

If correct health manpower and training decisions are to be made and planning is to be adaptive or flexible it is important to anticipate the possible directions and magnitudes of changes in the general health care system. It is not necessary to stress the need for planning to take account of possible changes in the health care environment - the question is what are the likely future developments?

This chapter contains a structured report of the general findings of the event assessment study.

(a) Health Care Environment

The general picture which emerges over the next two decades is one of a high cost, illness oriented, government dominated, urban based health care system in a society in which general social "illnesses" are increasing. It is viewed as both desirable and likely that general reviews and audits for health institutions will be initiated and that recurrent education will become an accepted part of the careers of all health professionals. There is no perceived shortage of recruits for health professions. The size of the government share of the health care system is estimated as being likely to increase both relatively and absolutely with dual funding (some Federal, some State) and local government authorities becoming more involved. In particular, the trend towards government control of health administration and planning is expected to increase markedly.

Participants in the study expressed a general cynicism about the possibility of health care decisions being made on the

basis of sound economic arguments rather than the present situation where they are made by politicians on the basis of ideology and for immediate electoral advantage (Event 45). The maintenance of the existing system of decision making was assessed as being very likely to continue, highly undesirable (ninety-eight out of ninety-nine on a desirability rating) and highly significant for the health care system (fifth in the overall set of rankings).

A number of specific issues are discussed in terms of social, technological and legal dimensions of the health environment.

(i) Social/Industrial Relations

Many dimensions of the social environment were assessed as being likely to deteriorate over the next two decades (Table 15). Increases in the levels of crime and violence, road accidents, psycho/social disorders and drug taking (both prescribed and non prescribed) were postulated, although naturally such changes were assessed as being highly undesirable,and it was estimated that there would be a continuing decline in the coherence of the family unit. Further, it was thought likely, that a general environmental deterioration would cause a range of new health problems. On the positive side, it was seen as both likely and desirable that individuals would take on responsibility for their own health and that there would be an increase in the acceptance and use of natural food diets.

As mentioned above, it was assessed that the rate of psycho/social disorders would increase over time. In addition, it was thought likely that the proportion of such treatments performed by registered personnel other than GPs would increase and such an increase was deemed as being desirable. Analysis of the views on desirability, disaggregated by professional groups, showed that whilst all professional groups supported this trend in treatment delivery, the average responses of health care practitioners and health care educators were significantly higher than those of administrators and social scientists.

TABLE 15

HEALTH CARE ENVIRONMENT - SOCIAL/INDUSTRIAL RELATIONS

	(a) Trends	Average Trend Movement[1]	Desirable Movement[3]
15	Psycho/social disorders.	.65	-.84
16	Proportion of treatments for psycho/social disorders performed by registered professionals other than GP's.	.60	.59
17	Individual responsibility for own health.	.25	.88
18	Acceptance and use of natural food diets.	.29	.54
19	Prescribed drug taking (in proportion to population).	.25	-.80
20	Non prescribed drug taking (in proportion to population).	.46	-.86
21	Road accidents (in proportion to population).	.39	-.91
22	Crime and violence (in proportion to population).	.59	-.95
23	Financial sanctions for services given other than in normal working hours.	.41	-.19
35	The coherence of the family unit, i.e. will it increase to reach the extended family concept or decrease requiring social support for children.	-.22	.68

	(b) Events	Probability[2]	Estimated Significance[2]	Desirability[1]
26	Working conditions will become a major industrial issue for health professionals	.67	.68	.07
29	Aspirations for higher salaries/status for some professions will lead to fewer jobs for these professionals.	.59	.70	-.37
61	Financial sanctions for people who choose ill health life styles.	.41	.62	.14
91	Free occupational health services provided by employers.	.59	.65	.49
94	New health problems caused by general environmental deterioration.	.68	.77	-.64
96	It will be established that all patients have the right to know their medical diagnosis, prognosis and proposed treatment.	.69	.74	.52
97	Health professionals will organise strong, militant unions.	.66	.71	-.19

[1] Range -1 to +1

[2] Range 0 to +1

[3] Range -1 to +1 ; + increase desirable
- decrease desirable

The industrial relations issues, perhaps predictably, implied a system in which costs would increase and services would decline. It was assessed as being likely that working conditions would become a major industrial issue for health professionals and that professionals would organise militant unions; the former issue being assessed as neither desirable nor undesirable and the latter as marginally undesirable (although significant in a statistical sense). In addition it was assessed that the trend towards financial sanctions for services given other than in normal working hours would increase, a move which was assessed as undesirable and that it was likely and undesirable that the aspirations for higher salaries would lead to fewer jobs in some professional areas.

(ii) Technology

Participants were reasonably optimistic that a number of significant technological breakthroughs would take place but no evidence was requested to support such assertions. Dimensions which were assessed as being fairly likely (i.e. about three chances in four of occurring or odds of about three to one on) were first, breakthroughs in telecommunications and telemetering which would allow remote diagnosis and monitoring, second, breakthroughs in patient transport services e.g. ambulance and air transport and third, the use of mass media for health education. (Table 16)

A general theme, that of accountability, recurred throughout the questionnaire and in this area the relevant event related to the strict use of cost-benefit criteria for assessing new technological developments. This development was assessed as being both likely to occur and desirable for the health system. Participants were uncertain as to both the likelihood and desirability of a rejection of the reliance on technological solutions to health problems in return for a greater emphasis on the "art" of medicine.

TABLE 16

HEALTH CARE ENVIRONMENT - TECHNOLOGY

	(a) Trend	Average Trend Movement[1]	Desirable Movement[3]
10	Rate of development of medical technology.	.61	.46

	(b) Events	Probability[2]	Estimated Significance[2]	Desirability[1]
57	Significant technological breakthrough in telecommunications and telemetering e.g. to allow remote diagnosis and monitoring.	.73	.68	.49
60	Significant technological breakthrough in patient transport services.	.70	.69	.57
69	Rejection of reliance on technological solutions to health problems i.e. greater emphasis on the "art" rather than the "science" of medicine.	.47	.73	.24
74	Introduction of new technological developments will be subject to strict cost-benefit criteria.	.64	.76	.44
76	Significant breakthrough in rehabilitation technology.	.54	.78	.68
86	Mass media used for health education.	.74	.74	.63

[1] Range -1 to +1

[2] Range 0 to +1

[3] Range -1 to +1; + increase desirable
- decrease desirable

(iii) Legal

The next two decades are likely to be periods in which individual rights, both professional and patient, are more clearly enuniciated. The implications range from a perceived increase in the number of malpractice suits against individual practitioners to the likely introduction of legislation which enables some health professionals, other than doctors, to prescribe drugs and which restricts the sale of analgesics and indigestion remedies to pharmacies. (Table 17)

The general impression of participants was that malpractice suits are more likely to be heard by the normal court system than either by lay tribunals or peer groups and that such an outcome is marginally desirable. (the other two outcomes being assessed as undesirable). Some differences among professional groupings exist, for example, whilst all groups assessed the event that malpractice suits would be heard by lay tribunals as being very undesirable, the social experts and consumer representatives were significantly less extreme, i.e. their average response was closer to zero, than their counterparts.

Legislation which informs the patients as to diagnosis, prognosis and proposed treatment and thus increases basic rights of the individual was assessed as being very likely to be introduced and very desirable. On the other hand, legislation which compels individual participation in preventive programs was estimated to be unlikely to occur and marginally undesirable.

TABLE 17

HEALTH CARE ENVIRONMENT - LEGAL

	(a) Trend	Average Trend Movement[1]	Desirable Movement[3]
12	Malpractice suits against individual practitioners.	.51	-.24

	(b) Events	Probability[2]	Estimated Significance[2]	Desirability[1]
12	Legal responsibilities of health professionals defined.	.72	.71	.53
36	Medicines such as analgesics & indigestion remedies restricted to pharmacies.	.60	.65	.41
65	Legislation introduced compelling individuals to participate in many preventive programs.	.35	.64	-.10
66	Malpractice suits heard by normal court system.	.63	.58	.19
67	Malpractice suits heard by lay tribunals	.30	.57	-.42
68	Malpractice suits heard by peer groups.	.47	.63	-.08
96	It will be established that all patients have the right to know their medical diagnosis, prognosis & proposed treatment.	.69	.74	.52
98	Appropriate legislation gives some health professionals other than doctors limited powers to prescribe drugs.	.58	.68	.16

[1] Range -1 to +1

[2] Range 0 to +1

[3] Range -1 to +1; + increase desirable
- decrease desirable

(b) Characteristics of Professionals

(i) General Observations

There are a number of general themes which emerge from the study. Some of the relevant issues are summarised in Table 18 and other issues related to particular professions are covered in more detail in later sections.

The first theme envisages an increased level of teamwork, involving recognition and acceptance of the role of the various health professions. This is seen directly in Trend 31, and also implied by a perceived increase in specialisation amongst health professionals and the likely acceptance by the community of registered professionals other than doctors for primary health care. It is also a recurring theme in the following sections, illustrated by a number of other assessments.

The second theme relates to the development of various forms of professional monitoring, Recurrent or continuing education is seen as very likely and desirable, possible becoming a requirement for continued registration. Although, on balance, respondents would prefer Federal registrations of professionals, State control is seen as likely to continue. Peer group cost-efficiency reviews by health professional groups is seen as fairly likely and fairly desirable and in conjunction with similar checks in other parts of the health care system will mean substantial changes in the outlook of professionals. The idea that professional registration might mitigate against effective team approaches was thought to be unlikely and undesirable.

There was seen to be a moderate increase in the percentage of health professionals who are salaried (Trend 8). Group collectives and some form of health maintenance organisation were both seen as about an even money chance and were judged, on balance, to be just desirable. (Social experts were more in favour of salaried professionals than other respondent groups). An implication of Trends 7, 8 and 31 is that the increase in salaried staff will be in the paramedical members of the team, rather than in doctors.

TABLE 18

CHARACTERISTICS OF PROFESSIONALS - GENERAL OBSERVATIONS

	(a) Projections	Estimated Low	Likely	High
3	Percentage of women trained in traditionally male professions (1975 graduates in medicine and dentistry combined contained 23% female).	26.7	36.5	45.5
4	Percentage of men trained in traditionally female professions, (1974 estimated workforce in nursing, physiotherapy and occupational therapy contained 4% males).	6.9	12.9	19.3

	(b) Trends	Average Trend Movement[1]	Desirable Movement[3]
8	Percentage of health professionals who are salaried.	.50	.57
9	Percentage of married women health professionals returning to work force as soon as possible after child bearing.	.56	.52
31	Interdisciplinary team delivery of care.	.57	.91
38	Specialisation amongst health care professionals.	.47	.00

	(c) Events	Probability[2]	Estimated Significance[2]	Desirability[1]
1	Reduced working hours by health professionals results in a restriction of availability and accessibility of health services.	.56	.74	-.45
9	The community accepts registered professionals other than doctors for primary health care.	.67	.77	.44
10	Group collectives funded to run health services on a self-help basis.	.46	.55	.18
15	Introduction of regular re-registration requirements for major health professions.	.66	.75	.54
20	Peer group cost-efficiency reviews by health professional groups.	.63	.68	.50
26	Working conditions (hours of work, health hazards, etc) will become a major industrial issue for health professionals.	.67	.68	.07
37	Registration of the major health professions remains a State rather than Federal responsibility.	.64	.60	-.16

(c) Events (cont'd)		Probability[2]	Estimated Significance[2]	Desirability[1]
47	Rotational system among health care professionals adopted to provide health services in remote outback areas.	.56	.68	.45
53	There will be a compression of the salary scale differentials in the health care field.	.55	.63	.22
55	Health care of a defined population to be the responsibility of an individual or specified group of health professionals.	.52	.62	.26
59	Recurrent or continuing education becomes an accepted part of the careers of all health professionals.	.79	.82	.79
64	Non acceptance of "diploma" professionals by degree trained professionals.	.52	.61	-.43
82	Professional registration mitigates against successful multi-disciplinary team approach to health care.	.44	.66	-.52
84	Health care diagnosis becomes less judgemental.	.65	.70	-.05
85	Clinical encounters reoriented to emphasise prevention as much as cure.	.63	.79	.71
97	Health professionals will organise strong, militant unions.	.66	.71	-.19

[1] Range -1 to +1

[2] Range 0 to +1

[3] Range -1 to +1; + increase desirable
- decrease desirable

Possible "industrial" issues which were raised, indicate that the health professions will move further away from the "selfless dedication" previously expected. Unionisation is considered likely but on balance undesirable. (Health practitioners in the sample were significantly more in favour of unionisation, registering a small positive desirability rating on average for Event 97). Working conditions are considered likely to become major industrial issues. The undesriable outcome, that reduced hours of work by health professionals would result in a restriction of availability and accessibility of health services,was not thought unlikely,with administrators giving this outcome a higher probability. Compression of salary scales for health professionals was considered likely, especially by educators and researchers. Social experts thought this was less likely but more desirable than other groups. Rotational systems for providing health services to remote areas was considered fairly likely and, in general, desirably although the health practitioners were less enthusiastic about the possibility.

The study suggests that there will be a significant alteration in the traditional sex distinction in the health profession with substantially more women entering medicine and dentistry etc., and more men entering nursing and the therapies. Although it is envisaged that increasing numbers of women will return to work after childbearing, there are nevertheless important implications for the system in these changes both in terms of training provisions and in the increased staff turnover that would result.

(ii) Doctors

Within the general trends discussed above, doctors stand apart in some aspects. A summary of relevant issues is contained in Table 19.

Firstly, whilst a general increase in the salaried system is envisaged, the percentage of general practice which is fee-for-service is only likely to decrease slightly. Health practitioners and administrators are fairly evenly divided as to which direction of change would be desirable with educators and social experts

TABLE 19

CHARACTERISTICS OF PROFESSIONALS - DOCTORS

	(a) Trends	Average Trend Movement[1]	Desirable Movement[3]
7	Percentage of general practice which is fee-for-service.	-.07	-.29
12	Malpractice suits against individual practitioners.	.51	-.24
32	Group practices supported by private paramedical staff.	.41	.60
36	Social status of doctors.	-.32	-.42
50	Acceptance of the role of paramedical staff by community medical practitioners.	.40	.92

	(b) Events	Estimated Probability[2]	Estimated Significance[2]	Desirability[1]
5	Fee-for-service system resists external evaluation of any kind.	.65	.77	-.52
34	Medical practitioners used to lead health care teams.	.68	.63	.09
59	Recurrent or continuing education becomes an accepted part of the careers of all health professionals.	.79	.82	.79
78	Continuation of the relative scarcity of medical manpower in rural areas.	.67	.76	-.63
85	Clinical encounters reoriented to emphasise prevention as much as cure.	.63	.79	.71
88	Fee-for-service will be replaced by health maintenance organisation.	.40	.67	.11
92	Formal links established between solo practitioners and community health centres.	.68	.71	.61

[1] Range -1 to +1

[2] Range 0 to +1

[3] Range - 1 to +1 ; + increase desirable, - decrease desirable

favouring a reduction in fee-for-service. A similar indication of little significant change in fee-for-service is evident in responses to Event 88, where health maintenance organisations are not seen as likely, nor very desirable.

Secondly, in the area of evaluation of performance, it is considered likely that the fee-for-service system will resist external evaluation, although, presumably may submit to peer group reviews as discussed earlier. This resistence was felt to be more undesirable by educators and other social experts than by health practitioners and administrators. The social status of doctors was seen to be declining marginally with a decline being thought to be desirable by most respondents (especially educators and researchers). The level of malpractice suits against individual practitioners was seen to be increasing moderately perhaps reflecting a reduction in the prestige of the profession.

Along with the general trend, it is envisaged that doctors will make more use of paramedical staff either through group practices supported by private paramedicals or by links with community health centres. Doctors' acceptance of such staff will increase and it is likely that doctors will lead health care teams. One obvious implication is that doctors will, in general, need to acquire managerial and personnel relations skills and be increasingly part of a team. The provision of these skills could be one of the purposes of the recurrent education seen as very likely to become an accepted part of the careers of all health professionals. An emphasis on prevention as much as cure in clinical encounters is seen as fairly likely and desirable, and this may also be an appropriate area for continuing education.

The medical profession will also be affected by the general trend for more women to enter traditionally male professions. The concept of a woman president of the AMA will become a real possibility. More importantly, higher turnovers, short term absences of women doctors for child bearing and possible difficulties

with male patients will have to be contemplated.

(iii) Nurses

In addition to the themes evident in the earlier general observations, there are a number of issues of particular relevance to nurses, who constitute a significant proportion of the professional health workforce. These are summarised in Table 20. The next two decades are perceived as being a time of major changes for the nursing profession. There are likely to be changes in the role and responsibilities of nurses and in their training and qualifications.

As discussed in other sections, nurses will share in the general team approach to health care. It is seen as very likely that community health nurses will play a large role with some of these being trained in areas of social medicine. Community nurses are likely to be given (and to accept) responsibility for performing some medical treatments and nurses in general are among those likely to be given limited powers to prescribe drugs.

Control of training for nursing is considered likely to move from hospitals to Colleges of Advanced Education - most probably in the form of three year degree programs. Some difficulties in the acceptance of earlier trained nurses by these "degree" nurses is expected (especially by administrators) and this is considered undesirable. Redistribution of duties within the nursing workforce, probably with increasing use of aides, is given an even chance of reducing the demand for professional nurses. A similar effect is considered likely from the aspiration of nurses for higher salaries and status.

Nurses will also be involved in the general trends towards recurrent education, re-registration, peer review and an increasing proportion of male professionals. This latter issue may have implications for the number of nurses required to be trained and for the career structures of the nursing profession.

TABLE 20

CHARACTERISTICS OF PROFESSIONALS - NURSES

	Events	Probability[2]	Estimated Significance[2]	Desirability[1]
14	Community nurses are given and accept responsibility for performing medical treatments.	.73	.76	.45
15	Introduction of regular re-registration requirements for major health professions.	.66	.75	.54
29	Aspiration for higher salaries/status for some professions (especially nursing) will lead to fewer jobs for these professionals.	.59	.70	-.37
58	Emergence of community health nurse trained in social medicine.	.76	.73	.58
59	Recurrent or continuing education becomes an accepted part of the careers of all health professionals.	.79	.82	.79
62	Redistribution of duties within the nursing workforce results in reduced demand for professional nurses.	.49	.67	-.14
64	Non acceptance of "diploma" professionals by degree trained professionals.	.52	.61	-.43
79	All major nurse education moves to Colleges of Advanced Education.	.69	.75	-.03
98	Appropriate legislation gives some health professionals other than doctors, limited powers to prescribe drugs.	.58	.68	.16

[1] Range -1 to +1

[2] Range 0 to +1

(iv) Professionals Other than Doctors and Nurses

Although the many groups of professionals covered by this group were well presented in the various respondent classes, the issues covered by the study were largely restricted to those broader than any one profession. In many event statements the word "paramedical" was used in an attempt to briefly describe this group of health professions. Relevant findings are summarised in Table 21.

The picture that emerges is one of increasing importance and acceptance of paramedicals in the delivery of health care. It was considered fairly likely that paramedical personnel would be given limited powers to prescribe drugs and act as first contact practitioners, although these developments were not enthusiastically viewed in terms of desirability. Wider and more positive use of such personnel in mental health care teams, for disadvantaged groups and (for example for the pharmacist) in prevention and treatment was seen as likely and desirable. These developments will be accompanied by a marginal increase in the acceptance of the role of paramedical staff by community medical practitioners and are unlikely to result in a decline in the standard of patient care.

Respondents saw as likely and marginally desirable that the health care system make increased use of "aide" type categories. This, together with the above picture implies a shift of manpower away from doctors and nurses and towards sub-professional and allied health professionals.

TABLE 21

CHARACTERISTICS OF PROFESSIONALS - OTHER THAN NURSES AND DOCTORS

	(a) Trends	Average Trend Movement[1]	Desirable Movement[3]
34	Role of the pharmacist in prevention and correction of drug misuse.	.40	.80
50	Acceptance of the role of paramedical staff by community medical practitioners.	.40	.92
52	Paramedical services for disadvantaged groups.	.39	.79

	(b) Events	Probability[2]	Estimated Significance[2]	Desirability[1]
31	Emergence of coordinated mental health care teams.	.73	.74	.58
50	Registered paramedical personnel act as first contact practitioners.	.62	.73	.30
75	Widespread use of paramedicals results in a decline in the standard of patient care.	.30	.73	-.42
89	Health care system makes increased use of "aide" type categories.	.75	.72	.35
98	Appropriate legislation gives some health professionals other than doctors, limited powers to prescribe drugs.	.58	.68	.16

[1] Range -1 to +1

[2] Range 0 to +1

[3] Range -1 to +1; + increase desirable
- decrease desirable

(c) Organisation of The Health Care System

(i) General

The findings in this section must, of course, be read in conjunction with Section (d) on Mode of Delivery, with Section (c) on Administration and to some extent with (b) on the Characteristics of Professionals. Some relevant issues are summarised in Table 22.

Whilst no dramatic change is perceived in the organisation of the overall system, the respondents see a health care delivery system less dominated by the hospital and the doctor but being based closer to the people in health centres, group practices, self help programs etc., making more use of (and giving more responsibility to) health professionals other than doctors.

However, it is considered unlikely that a home visit system would substantially replace the existing outpatient system, nor that health maintenance organisations would replace the fee-for-service system. Some form of contractural health care system is nevertheless given about an even chance of occurring, with reasonable support for the possibilities of occupationally based health services. The provision, by employers, of free occupational health services is considered likely and would provide a form of salaried service which would be an alternative to the generally hospital based salaried services.

More involvement with the community is likely to lead to consumer involvement in health care, (see also Section (e)) and in this regard non-health personnel are given a fifty-fifty chance of taking over health planning and administration. (The likely monitoring of health care services at regional levels might be associated with this development). The use of non-health professionals in this way is considered by educators to be more likely than fifty-fifty but much more undesirable than the mildly undesirable overall response. Social experts on the other hand consider the development to be less likely and more desirable.

TABLE 22

ORGANISATION OF THE HEALTH CARE SYSTEM - GENERAL

	Events	Probability[2]	Estimated Significance[2]	Desirability[1]
2	Present health insurance replaced by universal health insurance financed by income tax levy.	.57	.73	.13
4	Salaried health services are principally hospital based.	.57	.67	-.13
22	Home visit system substantially replaces the existing institutionally based out-patient system.	.36	.65	.03
39	Development of group occupational health centres.	.60	.57	.37
40	Salaried system proves inappropriate for dental services.	.45	.59	-.20
54	Health care services monitored and evaluated at regional levels.	.71	.69	.53
55	Health care of a defined population to be the responsibility of an individual or specified group of health professionals.	.52	.62	.26
81	Health planning and administration undertaken mainly by non-health professional personnel.	.51	.70	-.33
88	Fee-for-service will be replaced by health maintenance organisation.	.40	.67	.11
91	Free occupational health services provided by employers.	.59	.65	.49

[1] Range -1 to +1

[2] Range 0 to +1

The return to a universal, taxation funded, health financing scheme is considered likely by educators and social experts and given a less than even chance by health practitioners and administrators. Social experts considered such a move as more desirable than the barely positive overall desirability rating. The recent experience with Medibank, when properly analysed, should provide a basis for decision making in this regard at a later time and the implications for the organisation of the health care system should be more predictable.

(ii) Allocation of Resources

Further perceptions of the likely changes in the organisation of the health care system can be found in the likely trends in the allocation of resources to various activities in the system. Some of these issues are summarised in Table 23.

The total cost of the health care system is seen to be rising relative to other areas of the economy (Projection 1, see Section (f) for discussion), but within this increasing sum there are expected shifts in spending patterns. A number of areas are seen as likely to increase their proportion of the total health budget - some more than others. Moderate increases are envisaged for community health services, domiciliary care and preventive health services. Marginal increases are expected in the following areas (in order) : rehabilitation, the handicapped, health education in schools, health education generally, accessible community psychiatric facilities, child care services and occupational health programs. These changes are consistent with the findings in (i) above and imply that spending in traditional areas (especially hospitals) is likely to decline slightly as a proportion of all health care expenditure.

The increased proportion of spending in above areas and the increased use of paramedicals (largely salaried) as discussed in Section (b) is consistent with the expected moderate increase in the public sector health expenditure as a proportion of government budgets. This is also reflected in expected moderate increase in

TABLE 23

ORGANISATION OF THE HEALTH CARE SYSTEM -

ALLOCATION OF RESOURCES

	(a) Trends	Average Trend Movement[1]	Desirable Movement[3]
5	Public sector health expenditure as a proportion of budget.	.48	.28
6	Medical research funding from all sources as a proportion of gross domestic product.	.14	.70
39	Proportion of health care resources allocated to rehabilitation.	.39	.84
40	Proportion of health care resources allocated to domiciliary care.	.45	.91
41	Proportion of health care resources allocated to community health services.	.54	.86
42	Proportion of health care resources allocated to preventive health services.	.43	.90
43	Proportion of health care resources allocated to health education.	.36	.88
44	Proportion of health care resources allocated to health education in schools.	.37	.85
45	Proportion of health care resources allocated to accessible community psychiatric facilities.	.36	.87
46	Proportion of health care resources allocated to occupational health programs.	.31	.83
47	Proportion of health care resources allocated to child care services.	.34	.72
48	Proportion of health care resources allocated to handicapped (including accidents).	.37	.78
49	Proportion of health care resources allocated to administration.	.37	-.27

	(b) Events	Estimated Probability[2]	Significance[2]	Desirability[1]
49	Cost effective considerations form the basis of capital works allocations in health.	.62	.75	.39
71	Self help programs for health maintenance are developed.	.68	.70	.61
72	Self help programs for curative services are developed.	.53	.62	.24

[1] Range -1 to +1

[2] Range 0 to +1

[3] Range -1 to +1; + increase desirable
- decrease desirable

the level of political and bureaucratic control of the health care system (Trend 11, see Section (f)) and the marginal increase expected in the proportion of health care resources allocated to administration. This increased emphasis on administration is a consequence of the perceived increase in accountability, with its attendant evaluations and reviews.

Medical research is not seen as a major growth area with only a slight improvement expected in funding as a proportion of gross domestic product.

Self help programs, which may be one way of trying to contain health costs, are seen as quite likely and desirable in the health maintenance area but not so likely nor desirable in the area of curative services. On each of these issues the average probability and desirability estimates were higher from health practitioners and social experts than those from health educators and administrators. Other issues relating to consumer involvement are contained in Section (e).

(iii) Information and Health Records

There has been a fairly consistent improvement in the field of health records over the past decade but the developments foreseen by the respondents in the future (see Table 24) will require substantial changes in training and practice, not only for health records staff but for all health professionals.

The computerisation of health records is seen as very likely and reasonably desirable. It is regarded as quite likely that these computerised records will be held centrally with privacy safeguards, although this was considered as less desirable. The desire for safeguards on the use of such information is seen dramatically by comparing the events 43 and 44. Access to health records by health professionals nominated by the patient was considered likely and desirable whereas general access to professionals without the need for patient approval was considered unlikely and undesirable.

The less embracing and perhaps preliminary step of a

medications record system was considered likely and desirable. To be effective such a system would need to be held centrally or at least at a regional level.

A possible development arising from increased consumer participation and awareness could be the development of directories of health services which contain details of location, availability and type of service. This development, coupled with increased emphasis on health education should lead to a more informed and discriminating consumer. Section (e) contains other relevant issues relating to the role of consumers.

TABLE 24

ORGANISATION OF THE HEALTH CARE SYSTEM - INFORMATION AND HEALTH RECORDS

	Events	Estimated Probability[2]	Estimated Significance[2]	Desirability[1]
25	Computerised health records will be held centrally with privacy safeguards.	.70	.70	.35
30	Medication records systems established to monitor drug intake of individuals.	.61	.65	.40
43	Health records available to all registered health professionals without need for patient approval.	.43	.72	-.29
44	Health records available to all registered health professionals nominated by the patient.	.72	.74	.53
80	Consumers compile directories of health services which contain details of location, availability and type of services.	.70	.60	.49
90	Health records will be computerised.	.81	.72	.44

[1] Range -1 to +1

[2] Range 0 to +1

(d) Mode of Health Care Delivery

This area has been divided broadly into hospital and non-hospital based health delivery (Tables 25 and 26). On the hospital side participants are optimistic that there will be a gradual decline in the level of institutionalisation but not accompanied by any reduction in demand for expensive services. This is manifest in terms of an expected stabilisation of per capita hospital accommodation (bed ratios) and a decline in the average length of stay in hospitals (the latter estimated by means of both a projection and a trend). It is estimated and believed to be desirable that there will be a trend towards smaller hospitals with a high degree of specialisation which have outpatient clinics located outside the general hospital complexes. In addition there is support for the development of day care centres linked to small hospitals and for the establishment of inexpensive motel-type 'para hospitals' for ambulatory and convalescing patients. On the other hand, there is estimated to be, on average, a less than even money chance that the existing outpatient system will be replaced by a home visit system and in any event this development is assessed as being neither desirable nor undesirable.

Two generally undesirable developments are first, the belief that there will be an increase in the present level of demand for expensive hospital services and second, that salaried health services will be principally hospital based (this being estimated to have a better than even money chance of occurrence).

Non-hospital health services, primarily health centres and group collectives, are estimated to be the desirable growth areas (Table 26). There is, however, no evidence that this development will be accomplished other than by the present predominantly fee-for-service system (although there is general support for the introduction of health maintenance organisations as an alternative to fee-for-service).

There is perceived to be an increase in the trends towards

TABLE 25

MODE OF DELIVERY - HOSPITAL BASED

	(a) Projections	Estimated Low	Likely	High
5	Hospital accommodation per capita (bed ratios with a base of 6.5 beds per 1000).	5.2	6.5	8.2
6	Average length of stay in hospitals (base value 10 days).	6.3	7.9	10.4

	(b) Trends	Average Trend Movement [1]	Desirable Movement[3]
14	Level of "institutionalisation".	-.10	-.77
24	Length of stay in hospital.	-.38	-.74
25	Hospital size.	-.12	-.42
26	Degree of specialisation in hospitals.	.52	.14
27	Relative demand for expensive hospital services.	.44	-.50

	(c) Events	Estimated Probability[2]	Significance[2]	Desirability[1]
4	Salaried health services are principally hospital based.	.57	.67	-.13
8	Establishment of day care centres linked to small community hospitals.	.71	.67	.53
11	Inexpensive, motel-type 'para-hospitals for ambulatory and convalescing patients will handle at least half of all those requiring care in an institution (excluding mental patients).	.54	.72	.50
22	Home visit system substantially replaces the existing institutionally based outpatient system.	.36	.65	.03
24	Outpatient clinics established outside hospital complexes.	.64	.64	.33
63	Hospitals designed to deal with acute medical problems.	.69	.77	.50
99	Health care institutions organise to accept permanent part-time health staff including shared jobs.	.71	.65	.46

[1] Range -1 to +1

[2] Range 0 to +1

[3] Range -1 to +1; + increase desirable
- decrease desirable

interdisciplinary team delivery of care, group practices supported by private paramedical staff and an emphasis on "community care" provided by the community for the community. It is believed that the community will accept the concept of the health centre as a major provider of primary care and such acceptance is deemed highly desirable. The variety of services offered by community health centres is also expected to increase. In each of the above trends the increase was assessed as being highly desirable.

One particular area in which the level of non-institutional care is expected to increase is in the care of the elderly, although the size of the movement away from institutional care was not assessed as being more than a marginal increase. The direction, however, was assessed as being desirable by all groups but the social scientists were significantly less supportive of the desirability of such an increase in non-institutional care.

A number of non-mutually exclusive options were assessed as having at least an even money chance of occurrence within the time horizon. These included:

- inexpensive 'para hospitals' being established and handling at least half of all institutional care cases;
- multi-disciplinary health care teams being developed primarily in community health centres;
- the emergence of privately financed community health centres;
- development of self help programs for both health maintenance and curative services; and
- the establishment of formal links between solo practitioners and community health centres.

In the case of privately financed community health centres, all professional groups except the social scientists and consumers assessed the outcome as being desirable; this latter group suggesting the outcome would be undesirable. A further event,

group collectives being funded to run health services on a self help basis,was assessed as having a little less than an even money chance of occurrence and was viewed by the total group as being neither desirable nor undesirable.

These general developments in the mode of health delivery indicate a somewhat different system to the one currently in operation. Clearly, such issues as integrated training, small team management, health centre management and community involvement need to be explored. Health training at present is still primarily oriented towards institutional care and the bulk of both labour and capital resources end up in the hospital system. The implications for the user are not insignificant and will require some degree of acclimatisation or familiarisation.

TABLE 26

MODE OF DELIVERY - NON-HOSPITAL

	(a) Trends	Average Trend Movement[1]	Desirable Movement[3]
7	Percentage of general practice which is fee-for-service.	-.07	-.29
28	Emphasis on "community care" provided by the community for the community.	.44	.81
29	Acceptance by the community of community health centres.	.62	.85
30	Variety of services offered by community health centres.	.61	.85
31	Interdisciplinary team delivery of care.	.57	.91
32	Group practices supported by private paramedical staff.	.41	.60
37	Proportion of elderly people cared for in non-institutional environment.	.28	.57

	(b) Events	Estimated Probability[2]	Estimated Significance[2]	Estimated Desirability[1]
10	Group collectives funded to run health services on a self-help basis.	.46	.55	.18
11	Inexpensive 'para hospitals' handle at least half of all those requiring care in an institution (excluding mental patients).	.54	.72	.50
48	Multi-disciplinary health care develops primarily in community health centres.	.69	.72	.44
51	Emergence of privately financed community health centres.	.53	.57	.08
55	Introduction of health maintenance organisations.	.52	.62	.26
71	Self help programs for health maintenance developed.	.68	.70	.61
72	Self help programs for curative services developed.	.53	.62	.24
88	Fee-for-service will be replaced by health maintenance organisations.	.40	.67	.11
92	Formal links established between solo practitioners and community health centres.	.68	.71	.61

[1] Range -1 to +1

[2] Range 0 to +1

[3] Range -1 to +1; + increase desirable
- decrease desirable

(e) Consumers

(i) Involvement in Health Care, Expectations and Attitudes

The participants viewed the next two decades as being a period in which the involvement of the consumer in the planning, administration and provision of health care services would increase but that overall consumers would remain illness oriented and they would expect the best treatment irrespective of cost. The health care professionals would oppose the participation of the consumer in health care planning and operations (Table 27). The emphasis on "community care" at the non-institutional level was deemed likely to increase, an increase which was assessed as being highly desirable.

A number of desirable and significant developments for consumers were postulated including, involvement in the provision of community care, acceptance of registered professionals other than doctors for primary health care, involvement in the decisions affecting the provision of health care and the compilation of detailed directories of health services. The formation of powerful consumer groups, although likely, was not assessed as being desirable by professional groups other than the social scientists and consumer representatives (the other groups assessing the development as being just numerically positive but in a statistical sense as neither desirable nor undesirable).

A number of other developments suggested that the high cost, illness oriented, fee-for-service primary health care system may remain (the juxtaposition of high cost, illness oriented and fee-for-service cannot be construed from this study as being casually related). First, it was assessed as extremely likely that individuals who need health services will continue to expect the best possible treatment regardless of cost - an outcome which was assessed overall as being neither desirable nor undesirable with health administrators being the only professional grouping with a negative average response. Second, it was deemed very likely, although undesirable, that community attitudes to health would remain illness oriented. Third, the possibility of

TABLE 27

CONSUMERS - INVOLVEMENT IN HEALTH CARE, EXPECTATIONS AND ATTITUDES

	(a) Trends	Average Trend Movement[1]	Desirability Movement[3]
13	Demand for domiciliary services.	.68	.74
28	Emphasis on "community care" provided by the community for the community.	.44	.81
29	Acceptance by the community of community health centres.	.62	.85

	(b) Events	Estimated Probability[2]	Estimated Significance[2]	Estimated Desirability[1]
3	Health care professionals oppose consumer participation in health care planning and operations.	.61	.66	-.35
7	Community attitudes to health remain illness oriented.	.63	.81	-.56
9	The community accepts registered professionals other than doctors for primary health care.	.67	.77	.44
18	Significant involvement of the consumer in decisions effecting the provision of health care.	.61	.70	.41
23	Individuals who need health services will continue to expect the best possible treatment regardless of cost.	.84	.76	.08
41	Powerful health consumer groups will develop.	.63	.67	.12
65	Legislation introduced compelling individuals to participate in many preventive programs.	.35	.64	-.10
70	The community will regard the quality of care in the salaried medical service as inferior to that in private practice.	.51	.67	-.51
80	Consumers compile directories of health services which contain details of location, availability and type of service.	.70	.60	.49

[1] Range -1 to +1

[2] Range 0 to +1

[3] Range -1 to +1; + increase desirable
- decrease desirable

legislating to compel individuals to participate in many preventive programs was deemed unlikely to occur and its occurrence was assessed as marginally undesirable by all professional groups. Finally, it was assessed as being a fifty-fifty chance that the community will regard the quality of care in the salaried medical service as inferior to that in private practice, an outcome which was uniformly assessed as being undesirable.

(ii) Minority Groups

A small number of issues relating to isolated communities, elderly and handicapped and ethnic minorities were raised in the study. (Table 28)

Although it was assessed as being both likely and desirable that financial incentives would be extensively used to encourage medical practitioners to areas of under supply, that a rotational system among health care professionals would be adopted to provide health services in remote outback areas and that travel costs incurred by rural dwellers would be included in health insurance schemes it was also assessed as being likely and very undesirable that there would be a continuation of the relative scarcity of medical manpower in rural areas. There was support for the development of education and community self-support programs in remote rural areas; a scheme which may be used to balance the perceived long term shortages of medical manpower.

The possibility that people from ethnic minorities are trained to provide health services to those groups was assessed as very likely and desirable. The implications of such a development are significant for health manpower and training schemes.

Responsibility for the care of the elderly, severely handicapped and mentally retarded were issues addressed in this section of the study. The level of institutional care for the mentally retarded was assessed as being likely to remain at present

levels, the proportion of elderly cared for in non- institutional environment was assessed as being likely to increase (an increase which was deemed to be desirable) but it was believed to be likely that the family or individual responsibility for the severely handicapped would cease. There was no marked level of desirability (or undesirability) for this latter event although for the professional groups, there was a significant difference between the social scientists and consumer representatives (who assessed the outcome as marginally desirable) and the health educators (who assessed the outcome as marginally undesirable).

The implications of an aging population in Australia were considered in terms of amount of care for and proportion of total health costs directed towards the elderly. It was assessed as being likely that the quantity of care would decrease but that the proportion of total costs would rise - an obviously undesirable development.

Finally, the role of paramedicals in providing services for the disadvantaged was perceived to be one of increasing involvement in terms of level of service; a role which was assessed as being highly desirable.

TABLE 28

CONSUMERS - MINORITY GROUPS

	(a) Trends	Average Trend Movement[1]	Desirable Movement[3]
33	Institutional care for mentally retarded.	.00	-.12
37	Proportion of elderly people cared for in non-institutional environment.	.28	.57
52	Paramedical services for disadvantaged groups.	.39	.79

	(b) Events	Probability[2]	Estimated Significance[2]	Desirability[1]
6	Severely handicapped people will cease to be regarded as a family or individual responsibility.	.61	.74	-.05
17	People from ethnic minorities are trained to provide health services to those groups.	.70	.71	.58
21	Financial incentives are used extensively to encourage medical practitioners to areas of undersupply.	.65	.64	.35
46	Travel costs for health care treatment incurred by rural dwellers included in health insurance schemes.	.60	.63	.41
47	Rotational system among health care professionals adopted to provide health services in remote outback areas.	.56	.68	.45
52	Programs of education and community self-support implemented in remote rural areas.	.63	.68	.55
78	Continuation of the relative scarcity of medical manpower in rural areas.	.67	.76	-.63
93	As the proportion of aged grows the health care system will provide them with less care but nonetheless an increasing proportion of total health care costs.	.59	.73	-.43

[1] Range -1 to +1

[2] Range 0 to +1

[3] Range -1 to +1; + increase desirable
- decrease desirable

(f) Administration - Cost, Efficacy, Accountability and Control

The broad picture of the health care system in terms of cost, accountability and control is one of increasing costs, an increase in the level of government involvement in the provision and control of health services and a transfer of emphasis from "cure at any cost" to a cost-effectiveness based approach to resource allocations. (Table 29).

General projections of total cost of health services as a percentage of gross national product were estimated as being likely to increase substantially on the present base figure. Further, public sector health expenditure as a proportion of the budget was assessed as being likely to increase. The proportion of health costs to be met directly by the consumer was estimated as being likely to increase* but on average the participants did not see that either an increase or a decrease was a desirable movement for the size of the "gap". One specific item of cost which was assessed as being likely to increase, although undesirable, was indemnity insurance. Such an increase in cost may be a consequence of the introduction of some of the many professional accountability measures suggested.

At the general level of control it was assessed as very likely and desirable that government involvement in health planning and administration increase.The level of political and bureaucratic control of the health system was also perceived to be likely to increase significantly, although this movement was deemed very undesirable. Joint Federal and State control of health care was a trend which was perceived to be increasing although the desirable direction for change was not at all evident from the study. At the next level of government there was perceived to be an increase in the role of local government in the control and coordination of health services. The monitoring and evaluation of health services at regional level was also deemed likely and desirable to increase.

* This study was conducted in December 1977 - well before the Federal Government announced an increase in the "gap" in May 1978.

A number of specific professional controls and sanctions were assessed as being likely to occur. Those that were assessed as desirable included: evidence of post graduate training to be a mandatory prerequisite for re-registration, introduction of financial incentives to encourage medical practitioners to areas of under supply and the introduction, by the Government of a medical audit to control activities of health professionals. An undesirable development, which is in fact an extension of the status quo, is the likely situation that registration of the major health professions will remain a State rather than Federal responsibility.

Finally, a number of issues relating specifically to cost-effectiveness of the health care system and professional accountability are offered. Basically, a focus on cost-efficiency and cost effectiveness was assessed as being likely to develop but a general trend on desirability of such a development was not evident. In Section (e)(i) comment was made that individuals are likely to expect the best possible treatment regardless of cost (Event 23) but it is also believed that cost-effective considerations will influence the decision on the access of individuals to expensive health services. A decidedly undesirable development was that an increased emphasis on cost-efficiency would lead to a reduction in resources allocated to health services where the outcomes are difficult to measure. The use of cost-effectiveness criteria for capital works allocations and health care delivery were assessed as being generally desirable. A final issue on cost-effectiveness was the assertion that the private sector will prove to be more cost effective than the public sector in providing health care. This was assessed as having a little more than fifty-fifty chance of being proven and although there was no perceived overall direction of desirability, the administrators and the practitioners assessed the outcome as being marginally desirable whereas the educators and social scientists assessed the outcome as marginally undesirable. (No professional group had an average desirability significantly different to zero).

Two broad issues on accountability were assessed. First, it was assessed as likely but very undesirable that private doctors

would refuse to be accountable to governments i.e. external evaluation would be resisted by the fee-for-service system and secondly, it was assessed as very likely and very desirable that general reviews and audits for health institutions be introduced.

TABLE 29

ADMINISTRATION - COST, EFFICACY, ACCOUNTABILITY, CONTROL

		Estimated		
(a)	Projections	Low	Likely	High
1	Total cost of health service as a % of GDP (base figure 6.5%).	6.9	9.2	11.8
2	Total cost of education as a % of GDP (base figure 5.5%)	5.5	7.0	8.8

(b)	Trends	Average Trend Movement[1]	Desirable Movement[3]
1	Government involvement in health administration and planning.	.75	.52
2	Proportion of health costs met directly by the consumer, i.e. the gap between payment and rebate.	.19	-.06
3.	Role of local government authorities in the control & coordination of health services.	.16	.27
4	Dual funding, i.e. Joint Federal & State control of health care.	.22	.05
5	Public sector health expenditure as a proportion of the budget.	.48	.28
6	Medical research funding from all sources as a proportion of GDP.	.14	.70
11	The level of political & bureaucratic control of the health care system.	.64	-.43
23	Financial sanctions for services given other than in normal working hours.	.41	-.19

		Estimated		
(c)	Events	Probability[2]	Significance[2]	Desirability[1]
5	Fee-for-service system resists external evaluation of any kind, e.g. private doctors refuse to be accountable to governments.	.65	.77	-.52
13	Cost-effective considerations influence the decision on the access of individuals to expensive health services. That is, patient need or medical considerations cease to be the only criteria for such decisions.	.63	.79	.00

(c) Events (cont'd)		Estimated Probability[2]	Estimated Significance[2]	Estimated Desirability[1]
16	Evidence of postgraduate training a mandatory prerequisite for re-registration.	.59	.69	.39
21	Financial incentives are used extensively to encourage medical practitioners to areas of under-supply.	.65	.64	.35
27	Increased emphasis on the cost-efficiency of health services leads to a reduction in resources allocated to health services with outcomes which are difficult to measure.	.62	.80	-.37
28	Indemnity insurance becomes a major cost item.	.60	.69	-.57
33	Method of health care delivery for different health programs determined on a cost-effectiveness basis rather than by traditional medical roles.	.65	.72	.37
37	Registration of the major health professions remains a State rather than Federal responsibility.	.64	.60	-.16
42	General reviews and audits for health institutions.	.79	.75	.65
46	Travel costs for health care treatment incurred by rural dwellers included in health insurance schemes.	.60	.63	.41
49	Cost effective considerations form the basis of capital works allocations in health.	.62	.75	.39
54	Health care services monitored & evaluated at regional levels.	.71	.69	.53
56	Private sector proves to be more cost effective in providing health care than the public sector.	.54	.68	.03
82	Professional registration mitigates against successful multi-disciplinary team approach to health care.	.44	.66	-.52
87	Government introduces a medical audit to control activities of health professionals.	.63	.72	.30

[1] Range -1 to +1

[2] Range 0 to +1

[3] Range -1 to +1; + increase desirable
- decrease desirable

(g) Health Education and Training

The findings from the study on this topic are discussed extensively in Chapter 9. The events in Table 30 may be classified broadly into professional and institutional. With respect to the former it was deemed highly desirable, very significant and very likely that recurrent or continuing education would become an accepted part of the careers of all health professionals, a development which may have radical implications for manpower planning, health training and design of courses for re-training. By way of reinforcement, it was assessed as likely and marginally desirable that a mandatory prerequisite for re-registration would be evidence of post graduate training. It was also assessed as being very likely that there would be no shortage (in total) of recruits for health professions although the distributional imbalance, discussed earlier, may not be alleviated.

The following institutional developments were all assessed as being likely (at least a better than fifty-fifty chance of occurrence) and desirable: health studies becoming recognised disciplines in both primary and secondary schools, use of mass media for health education, modification of academic criteria for admission to medical schools based on motivation and personality, introduction of programs of education and community self support in remote areas and the establishment of "centres of excellence" in health education. The possibility of a common initial education of two years for all health professionals was assessed as being unlikely to occur but its desirability was assessed as being marginally positive. The information on professional groupings revealed that the practitioners and the social scientists assessed the outcome as desirable (i.e. average responses statistically greater than zero) whereas for the other two groups, educators and administrators, the average assessments were neither desirable nor undesirable with the average response for educators being just negative (but not statistically).

TABLE 30

HEALTH EDUCATION AND TRAINING[3]

	Events	Probability [2]	Estimated Significance [2]	Desirability [1]
16	Evidence of post-graduate training a mandatory prerequisite for re-registration.	.59	.69	.39
32	Establishment of "centres of excellence" in health education.	.57	.63	.34
35	Health studies becomes recognised discipline in secondary schools.	.69	.72	.62
38	There will be common initial education of two years for all health professionals followed by specialised training.	.42	.65	.18
52	Programs of education and community self-support implemented in remote rural areas.	.63	.68	.55
59	Recurrent or continuing education becomes an accepted part of the careers of all health professionals.	.79	.82	.79
77	No shortage of recruits for health professions.	.75	.75	.37
83	Health education becomes part of basic primary education.	.71	.72	.66
86	Mass media used for health education.	.74	.74	.63
95	The academic criteria for admission to medical schools will be modified by criteria based on motivation and personality.	.56	.78	.52

[1] Range -1 to +1

[2] Range 0 to +1

3 This topic is the focus of study in Chapter 9.

Conclusion

An attempt has been made to summarise the substantial amount of information produced in the study. The framework used to present the findings is in some sense arbitrary but it does represent a structure which emerged during the event generation seminars and the processing of the event assessment information. Some care has been taken to avoid inferential comment on the findings and there has been no attempt in this Chapter to link the findings to specific manpower policies. It is important that the perceptions and judgements of those participating be accurately recorded.

It may have been possible to search for consensus and to establish areas of disagreement had there been a further round of event assessment supplemented by participant comment. This was outside the scope of this particular study.

In Chapter 9 some specific events and trends relating to health manpower and training policies are discussed in the context of general information collected at the event generation seminars. In that Chapter there is some attempt to be interpretive and inferential.

CHAPTER 9

HEALTH TRAINING POLICY OPTIONS

The focus of the study was the collection of subjective judgements for structuring a context for health manpower and training. A by product, however, was the collection of a considerable amount of information on health training policy options. This information on possible policy developments was a response to both the perceived current problem situation and the postulated future developments and changes in the health care system. The policy suggestions, which were extracted from both the written input of participants in the event generation seminars and the issues finally assessed, are classified broadly as follows:

- Manpower composition and the magnitude of the provision of health training facilities
- Type of training
- Responsibility, control and finance
- Institutional base
- Content, style and emphasis of training, and
- Accessibility of training facilities

The policy suggestions have not been evaluated nor do they constitute a "package" of recommendations. They do, however, indicate possible responses and initiatives for consideration by health decision makers at federal and state levels. Issues referred to in this Chapter which have been formulated as events, trends and projections are summarised in Attachment 9.1.

1. Manpower Composition and the Magnitude of the Provision of Health Training Facilities

Determining health manpower composition and the magnitude of the provision of health training facilities are perhaps more important than the corresponding problems in other fields. This is due to the fact that if there is an oversupply, graduates can, in most health fields, set up in private practice, generate work and thereby raise the community's health costs. On the other hand, shortages can lead to reduction of health services and attendant suffering. The problem is complicated also by the relatively long lead time in the training program for many fields and the narrowness of the expertise of most health professionals which makes career re-orientation very unattractive.

Respondents saw several developments which could significantly influence the number of health professionals required and the relative size of the various professions. Some of these related to the amount of work that would be done by an individual in the future. It was considered likely that private practitioners would choose to do less work rather than earn high gross salaries (Event 19), a move that may result in a reduction in service (Event 1) and moderate increases in cost penalties for after hours work (Trend 23). An implication is that more practitioners will need to be trained. A similar conclusion can also be drawn from the finding that there will be an expected increase in the proportion of women in the medical and dental fields (Projection 3); the consequence being that many are likely to leave the work force for family purposes. This may be offset to some extent by a fairly significant increase in the proportion of women who will return to the work force after childbearing (Trend 9) although it is likely that some of those may wish to take advantage of the strong possibility of permanent part-time work (Event 99).

The reverse may be likely, however, for the traditionally female professions such as nursing and the therapies. An increase in male participation here (Projection 4), coupled with

more women returning to work after childbirth, could imply reduced training provisions.

Personnel mix might also be effected by expected changes in the roles and responsibilities of doctors in relation to other registered professionals. Events 9, 14, 50 and 98 and Trend 16 all suggest the reasonable likelihood and desirability of added responsibility for other professionals in primary care, drug prescription and psycho/social treatments. Increased use of 'aide-type' categories of staff is envisaged (Event 89) and would need appropriate trained provision. But it is not thought likely that this and other changes in workforce structures would lead to a reduction in the need for existing professionals (Events 29, 62).

An emerging area which is seen to be of increasing importance is the field of health records. In particular computerisation is expected (Events 25,90) with access possible by health care professionals nominated by the patient (Event 44). These changes would require a significant development of this area of training.

The general issue of recurrent education would also have significant implications for the magnitude of educational facilities that will need to be provided. It was suggested that on-going surveys of both consumers and health professionals be undertaken to assess demand and to better structure the health manpower composition. Resolution of a related issue, geographical imbalance of health professionals, was suggested by way of the introduction of mobility incentives.

Although it seems to be basically agreed that the provision of facilities for health training should be as closely related as possible to the need for such personnel, some of the findings do indicate changing preferences of recruits to the health professions.

The first area is the expected change in the sex balance in some areas. Projection 3 indicates a possible increase in the proportion of women in traditionally male professions ranging from a low of 27% to a high of 45% with 37% being most likely proportion of women. Projection 4 indicates a possible increase in the proportion of men in traditionally female professions ranging from a low of 7% to a high of 19% with 13% being the most likely value. No difficulty is seen in these changes, apart from possible implications for the numbers of people trained, and no shortage of recruits for the health professions is envisaged (Event 77).

The second area related to more general demands by the community for health education and consumer participation. Consumer action is seen as likely (Events 18, 41, 80) although not always very desirable (Event 41 in particular). Although direct involvement of consumers in treatment is not thought very likely nor desirable (Events 10, 72), participation in preventative activities is seen as likely and desirable (Event 71 and Trends 17, 42). The educational implications of these changes can be seen in the fairly likely development of health education in primary and secondary schools (Events 35, 80 and Trends 43, 44) and the use of mass media in health education (Event 86). The need to train teachers and others to reflect these consumer preferences is obvious.

2. Type of Training

The policy themes in this area suggested professional training at university or college degree levels for many professional health groups, greater emphasis on post-graduate training for professionals, training courses for community health educators, recurrent education programs (of various types) being mandatory for re-registration for members of all professional groups and for women and men returning to the workforce, an increased emphasis on patient contact in the early years of medical training and the introduction of health care team training at particular institutions. A number of specific recommendations were offered

and these have been classified as follows:

(a) Direction of Training

(i) Development of multi-purpose course designs e.g. common first year course for all professionals.

(ii) Pre-service teacher training concept introduced for all nurse training courses.

(iii) Specialised training courses for medical students in non-metropolitan areas.

(iv) Structured nurse training courses, rather than in-service courses.

(v) Introduction of "sandwich courses" for professional training of pharmacists.

(b) Length

(i) General practitioners training program reduced by 20%.

(ii) Training period for nurses increased by 25%.

(iii) Length of training course for dentists to be geared to professional work to be undertaken on completion of the course.

(iv) Short basic courses introduced as part of formal re-education for career enhancement.

(c) Emphasis

(i) Post-graduate vocational training made

compulsory for general practitioners.

(ii) Pharmacists required to undertake regular training (e.g. every three years) to be allowed to continue in practice.

(iii) Psychologists required to undertake vocational courses at undergraduate level.

(iv) Aides trained under the supervision of the profession for whom "aiding" is to be undertaken.

The future development judged to have the highest impact on the health manpower and training system, is related to recurrent education. The respondents felt that it is very likely and very desirable that recurrent education become an accepted part of the careers of all health professionals (Event 59). They also felt that some such updating might well become required for continued professional registration (Events 15, 16).

Some of the implications of this development have been mentioned elsewhere and include:

(a) an increase in the number of trained personnel (to allow some to be engaged in retraining)

(b) the provision of retraining facilities, and

(c) the need for professionals working in non-urban centres to have access to retraining facilities.

3. Responsibility, Co-ordination and Control of Manpower Training

The general climate was assessed to be one in which costs

for graduate training were increasing and further education for professionals was deemed necessary (but to be undertaken at their own expense). It was believed that formal co-ordination ought to be encouraged between both educators and consumers and between educators and employers of skilled labour. Specific recommendations included:

(a) Entrance to Training Programs

(i) Introduction of a quota system for entrance to medical programs;

(ii) Size of the quota to be determined on the basis of formal manpower projections.

(iii) Introduction of vocationally based input criteria for all medical schools.

(iv) A combination of motivation and tertiary performance adopted as input criteria for all health degree programs.

(v) Reservation of places in medical schools for relevant foreign language students.

(vi) Use of manpower planning to 'allocate' students to various professional health care areas; and

(vii) Open entry to all programs (compared to the quota system recommended earlier).

(b) Coordination and Control

(i) Formal means to monitor the relevance of course objectives and course contents introduced e.g. independent educational authority.

(ii) Undergraduate dental program financed out of a "client paying" graduate program.

(iii) Formal evaluations of professional health care training costs undertaken as part of an overall cost-effectiveness approach to health manpower training e.g. Dental therapist costs $29,000 and has a work expectancy of from 2 to 8 years service whereas a dentist has a 30 - 40 year work expectancy and costs, on average, $45,000.

4. Institutional Base for Training

The education of health professionals is conducted mainly in universities, colleges of advanced education and in teaching hospitals. The only major change in the existing pattern envisaged by the study was the movement of nurse education from hospitals to colleges (Event 79). Respondents felt that this move was fairly likely but were evenly divided about the desirability of such a move.

On another issue (Event 32), respondents felt that the establishment of "centres of excellence" in health education was moderately likely and that this specialisation was fairly desirable.

In regard to the total demand for health care personnel, answers given to projections 1 and 2 imply that health training may need to occupy an increasing proportion of the education system. Respondents felt that the proportion of GDP spent on health is likely to increase by 41% whilst the proportion of GDP spent on education is likely to increase by only 27%. This is supported by the response to Trend 51 which indicates that there will be a moderate increase in the health care workforce relative to the total workforce.

A number of specific, and in some cases conflicting,

policy recommendations were offered. The broad thrust of the recommendations is detailed below:

(i) Involve universities in training of all health professionals.

(ii) Switch from universities to CAE's for training higher and specialised degree personnel e.g. chiropodists, paediatricians.

(iii) Reduce hospital based training for all health professionals in favour of (i) a switch in academic institutions, in particular CAE's and (ii) a move to regional training centres and community centres.

(iv) Recognise small rural hospitals for post graduate qualifications i.e. breakdown the traditional concept of urban based large teaching hospitals.

5. Content, Style and Emphasis of Training

The study has revealed numerous possible developments which will require some change in the content of health professionals' training courses in order to properly prepare them for their work. Two major thrusts can be discerned from the results.

Firstly, the respondents predict a move from institutional care to more community based services. This is shown in an expected and desired decrease in institutionalisation (Trend 14); an expected and desired increase in domiciliary care (Trend 13) and in the proportion of health care resources allocated to domiciliary care, community health services and preventive health services (Trends 40, 41, 42). An emphasis on prevention (Event 85) in clinical encounters is also seen, despite the likely continuation of an undesirable illness orientation of community attitudes (Event 7). This change of emphasis in type

of service seems to be related to an expected increase in psycho/social disorders (Trend 15) and the likely emergence of coordinated mental health teams (Event 31) and community nurses trained in social medicine (Event 58).

Secondly, the respondents predict a desirable increase in the use of interdisciplinary teams (Trend 31) based in community health centres (Event 48) or group practices (Trend 32). Increased acceptance of the role of paramedical staff by community medical practitioners is seen as desirable and likely (Trend 50) and this may well be related to the increased responsibility predicted for such staff and discussed under Section 2 above. In this regard, the role of the doctor as team leader (Event 34) and as the person held responsible for the cost efficiency of the health care system (Events 20, 33, 42) suggest the need for doctors to be suitably prepared in administration techniques.

Both of these major developments may require substantial re-thinking of traditional curricula if the educational system is to continue to adequately prepare health professionals.

Two positive suggestions made for changes in the educational system as part of this phase of the study did not receive great support. The introduction of a two year common initial education period was not considered likely or very desirable (Event 38) whilst the modification of academic criteria for admission to medical schools by criteria based on motivation and personality, was only assessed as moderately desirable (Event 95).

A number of other policy suggestions were offered but not evaluated. These included:

(i) Core training (not necessarily two years) for <u>all</u> health care personnel.

(ii) Corporate management taught as a fundamental dimension of health training.

(iii) Community practice dimension introduced into all medical practitioner training courses.

(iv) Curriculum design undertaken jointly by educators, students, users, practitioners and employers; and

(v) Educational administrators involved in compulsory field practice on a regular basis.

Finally, a number of specific recommendations on course emphasis and content were offered for particular professional groups.

(a) Content of Courses

(i) Pharmaceutical training to include basic elements of diagnosis.

(ii) Training in occupational health for physicians; and

(iii) Dietetics and nutrition part of the training of all health workers.

(b) Emphasis of Training

(i) Increased emphasis on health prevention, exercise and physical training as part of basic medical degree.

(ii) Increased emphasis on counselling skills, preventative medicine and socio-psycho medicine; and

(iii) Increased emphasis on work experience in health professional training.

6. Accessibility of Training Facilities

Geographic accessibility to educational facilities by both health professionals and their families is a growing problem.

The study indicates the likely continuation of the relative scarcity of medical manpower in rural areas (Event 78) which is obviously undesirable. Although we have assessed several possible developments which might alleviate the problem in regard to the delivery of health care, the situation is likely to worsen if recurrent education becomes required for continued registration. This latter event was considered fairly likely and desirable (Events 15, 16) but it raises the need to make provision for recurrent education for practitioners in remote areas.

In regard to special groups generally, it was considered quite likely and desirable that people from ethnic minorities (e.g. aboriginals and migrant groups) be trained to provide health services to those groups (Event 17). This may require special quotas to be established in appropriate institutions. One specific policy recommendation was that migrant doctors be encouraged to come to Australia to fulfil the need for adequate collection of patient histories and appropriate diagnosis.

Conclusion

Subjectively based procedures, such as those employed in this study provide a means for collective policy initiatives. The inputs in no way comprise a complete set of policy options. They do, however, provide a range of alternative possibilities which may be assessed and evaluated within a wider policy framework.

Attachment 9.1

This attachment contains a list of events, trends and projections referenced by number in Chapter 9 and summary tables of aggregate assessments for the particular issues.

TABLE 9.1(a) - EVENT STATEMENTS

1. Reduced working hours by health professionals results in a restriction of availability and accessibility of health services.

7. Community attitudes to health remain illness oriented, demanding mainly curative services.

9. The community accepts registered professionals other than doctors for primary health care.

10. Group collectives funded to run health services on a self-help basis.

14. Community nurses are given and accept responsibility for performing medical treatments, i.e. nurse uses judgement as to when a referral to doctor, etc. is necessary.

15. Introduction of regular re-registration requirements for major health professions.

16. Evidence of post-graduate training a mandatory prerequisite for re-registration.

17. People from ethnic minorities (e.g. aboriginals and migrant groups) are trained to provide health services to those groups.

18. There will be significant involvement of the consumer in decisions effecting the provision of health care.

19. Private practitioners trade hours of work for increases in gross income. That is, they choose to do less work rather than earn higher gross income.

20. Peer group cost-efficiency reviews by health professional groups.

25. Computerised health records will be held centrally with privacy safeguards.

29. Aspiration for higher salaries/status for some professions (especially nursing) will lead to fewer jobs for these professionals.

31. Emergence of coordinated mental health care teams.

32. Establishment of "centres of excellence" in health education.

33. Method of health care delivery for different health programs determined on a cost effectiveness basis rather than by traditional medical roles.

34. Medical practitioners used to lead health care teams.

35. Health studies becomes recognised discipline in secondary schools.

38. There will be common initial education of two years for all health professionals followed by specialised training.

41. Powerful health consumer groups will develop.

42. General reviews and audits for health institutions.

44. Health records available to all registered health professionals nominated by the patient.

48. Multi-disciplinary health care develops primarily in community health centres.

50. Registered paramedical personnel act as first contact practitioners.

58. Emergence of community health nurse trained in social medicine.

59. Recurrent or continuing education becomes an accepted part of the careers of all health professionals.

62. Redistribution of duties within the nursing workforce results in reduced demand for professional nurses.

71. Self help programs for health maintenance are developed.

72. Self help programs for curative services are developed.

77. No shortage of recruits for health professions.

78. Continuation of the relative scarcity of medical manpower in rural areas.

79. All major nurse education moves to Colleges of Advanced Education.

80. Consumers compile directories of health services which contain details of location, availability and type of service.

85. Clinical encounters reoriented to emphasise prevention as much as cure.

86. Mass media used for health education.

89. Health care system makes increased use of "aide" type categories.

90. Health records will be computerised.

95. The academic criteria for admission to medical schools will be modified by criteria based on motivation and personality.

98. Appropriate legislation gives some health professionals other than doctors, limited powers to prescribe drugs, e.g. community nurses and pharmacists.

99. Health care institutions organise to accept permanent part-time health staff including shared jobs.

TABLE 9.1(b) - TREND STATEMENTS

9. Percentage of married women health professionals returning to workforce as soon as possible after child bearing.

13. Demand for domiciliary services.

14. Level of "institutionalisation", i.e. extent to which care is located in hospitals (as opposed to homes, community health centres).

15. Psycho/behavioural/social disorders.

16. Proportion of treatments for psycho/social disorders performed by registered professionals other than GPs.

17. Individual responsibility for own health.

23. Financial sanctions for services given other than in normal working hours.

31. Interdisciplinary team delivery of care.

32. Group practices supported by private paramedical staff.

40. Proportion of health care resources allocated to domiciliary care.

41. Proportion of health care resources allocated to community health services.

42. Proportion of health care resources allocated to preventive health services.

43. Proportion of health care resources allocated to health education.

44. Proportion of health care resources allocated to health education in schools.

50. Acceptance of the role of paramedical staff by community medical practitioners.

51. Size of health care workforce relative to total workforce.

TABLE 9.1(c) - PROJECTION STATEMENTS

1. Total cost of health service as a percentage of Gross Domestic Product (Current value is approximately 6½%).

2. Total cost of education as a percentage of Gross Domestic Product (current value is approximately 5½%).

3. Percentage of women trained in traditionally male professions (1975 graduates in medicine and dentistry combined contained 23% female).

4. Percentage of men trained in traditionally female professions, (1974 estimated workforce in nursing, physiotherapy and occupational therapy contained 4% males).

TABLE 9.1(d) - EVENT ASSESSMENT

Event No.	Average Probability	Average Confidence	Average Significance	Average Desirability
1	.56	.64	.74	-.45
7	.63	.70	.81	-.56
9	.67	.68	.77	.44
10	.46	.51	.55	.18
14	.73	.70	.76	.45
15	.66	.67	.75	.54
16	.59	.66	.69	.39
17	.70	.65	.71	.58
18	.61	.63	.70	.41
19	.64	.64	.66	-.10
20	.63	.64	.68	.50
25	.70	.66	.70	.35
29	.59	.61	.70	-.37
31	.73	.63	.74	.58
32	.57	.58	.63	.34
33	.65	.62	.72	.37
34	.68	.69	.63	.09
35	.69	.60	.72	.62
38	.42	.60	.65	.18
41	.63	.58	.67	.12
42	.79	.69	.75	.65
44	.72	.65	.74	.53
48	.69	.69	.72	.44
50	.62	.65	.73	.30
58	.76	.68	.73	.58
59	.79	.74	.82	.79
62	.49	.60	.67	-.14
71	.68	.60	.70	.61
72	.53	.56	.62	.24
77	.75	.72	.75	.37
78	.67	.65	.76	-.63
79	.69	.70	.75	-.03
80	.70	.61	.60	.49
85	.63	.66	.79	.71
86	.74	.65	.74	.63
89	.75	.68	.72	.35
90	.81	.73	.72	.44
95	.56	.63	.78	.52
98	.58	.57	.68	.16
99	.71	.62	.65	.46

Scales: Probability, Confidence, Significance 0 to 1

Desirability -1 to +1

TABLE 9.1(e) - TREND ASSESSMENT

Trend No.	Expected Movement	Desirable Movement
9	.56	.52
13	.68	.74
14	-.10	-.77
15	.65	-.84
16	.60	.59
17	.25	.88
23	.41	-.19
31	.57	.91
32	.41	.60
40	.45	.91
41	.54	.86
42	.43	.90
43	.36	.88
44	.37	.85
50	.40	.92
51	.42	.29

Scale: Expected / Desirable } Movement: -1 (significant decrease) to +1 (significant increase)

TABLE 9.1(f) - PROJECTION ASSESSMENT

Projection Number	Average Lower Bound	Average Most Likely Value	Average Upper Bound
1	6.9	9.2	11.8
2	5.5	7.0	8.8
3	26.7	36.5	45.5
4	6.9	12.9	19.3

CHAPTER 10

GENERAL COMMENTS ON THE STUDY

As part of the overall approach to research, participants were invited to comment on the various aspects of the study. Structured subjective assessment is not an inherently easy task to undertake without a careful operational definition of every concept so that they have the same meaning for all participants. Nevertheless, on balance, the response to the study and the comments offered were encouraging. We have in no way attempted to conceal the limitations of such an approach. It should be stressed, however, that there are alternatives to involvement of practitioners, users, consumers and administrators in discussions of the health care system and its future developments. They include approaches to assessment which are partisan and likely to overlook significant developments because they happen to be outside the expertise of the particular group of analysts.

A fundamental assumption in the approach is that forward thinking and thus adaptive planning are valuable tools. This is not universally accepted and I quote from a non-participant "In my view bureaucratic planning is little more than formalised wishful thinking. As I credit my fellow citizens with sufficient self-interest and intelligence to wish to make important decisions regarding their own health care free of government-imposed paternalistically planned for their own good, I prefer not to be associated with your survey, 1984 is already only seven years away." It is important to recognise that a futures study of the kind conducted is no way an attempt to advocate a government imposed future for health care. It is a search for developments and changes which may assist those involved in the health care system to better i.e. more effectively, meet the needs of these "citizens".

Brief comment is offered on the major issues of concern raised by participants.

(a) Approach to Selecting Participants

The study does not rely for its validity on selecting a random sample of members of the Australian population and the basic rationale for selecting participants is outlined in Chapter 4.

Detailed analysis and comparison of pilot study responses and total survey responses suggest that in any further studies it would be possible to trade the size of the respondent group for number of approaches to them. There were no differences between average responses from the various states and a very small number of significant differences among professional groups. More rounds of assessment may be a more effective use of the time and resources available.

(b) Issue Description

This problem was the issue most frequently raised by the participants. In the case of projections many respondents felt that quantitative percentages were too difficult to assess and that such assessment was meaningless. (Two projections in particular caused some concern; the first, projection 7, because the percentage figure was so small and the second, projection 8, because we inadvertently wrote General Practitioner for Doctor). A related point was that some of the trends could have been reformulated as projections and then subjected to usual extrapolation procedures. In any further studies it would be our intention to provide more than just a base current figure (for instance, a time series and possibly a graph to depict growth or change over time), but still to seek subjective trend and projection assessments. There is nothing sacrosanct about forecasting models and their performance is sufficiently variable to warrant, or at least not preclude the use of, other sources of estimates.

The ares in which there was most comment was that of event statements. Comments included: bad wording, ambiguous statement, presupposition of another event, tense of questions, double barrelled and negative questions, implied bias because of the direction i.e. occurrence or non-occurrence of the event and too many ideas in a single event statement. The process of event formulation is certainly not an easy task despite the fact that we had a pre-test and a pilot study as a result of which many items were reformulated. The generality of the context contributed to the variety of interpretations placed on issues. The problems of bad wording and ambiguities in event statements are entirely ours, although an attempt was made to limit these. Perceived bias in the direction of the questions was certainly unintended as almost every issue has a converse and most events could have been reformulated as trends. The inclusion of conditional statements was undertaken with some reluctance as it is clear that participants can more easily answer a single idea event statement. On the other hand, it is the causal or other links which are important and in these cases in which a link was seen as being the significant issue the two items were combined into one event. This should not change the validity or method of assessment as it is the total statement which is being assessed for likelihood of occurrence, desirability of given occurrence etc., and <u>not</u> the various parts. Our inability to stress this may have contributed to this misunderstanding.

(c) <u>Evaluation of Events</u>

A number of participants were concerned that the method of assessment used was foreign to their way of thinking, a problem with which we have some sympathy. The concept of probability or likelihood of occurrence was especially worrying for some. It is worth noting in passing that many of the issues considered in this study as "uncertainties"

are either totally excluded or discussed as though they will not occur in many descriptive (and quantitative) expositions on the health care system. The method of expression used in the study is the simplest and best we have found.

Some comments were directed to the irrelevancy of some of the measures (in particular desirability) for some of the events. This problem is acknowledged and in current methodological developments, a "not relevant" alternative is provided.

A further comment related to the length of the questionnaire the inclusion of redundant items. With respect to the length it is worth noting that there were a significant number of additional more detailed or specific items which were omitted. Careful scrutiny of all the items reveals differences, sometimes subtle, between all event statements. A small number of trend issues duplicated event statements so that comparative measures may be investigated.

One final comment was that there was no opportunity for participants to argue. In any more specific or directional follow-up studies it is imperative that each item be assessed and discussed either by written or oral communication.

(d) Coverage and Scope of the Study

Although there were comments on the length of the study there were equally many comments on areas which were not adequately treated in the questionnaire. Considerable effort was directed towards reflecting issues that were raised at the event generation seminars and many of the items not included would be input to any further study.

A worry of a more general nature was as follows: whilst assessments of individual items may reflect my perceptions in total the questionnaire does not seem to reflect my perspective of the future i.e. the "trees and wood" dilemma.

It is our belief that a synthetic picture emerges from the set of items, assisted by the prompting of possible structure which was undertaken during the event generation seminars.

Conclusion

None of this discussion will satisfy the health care professional who requires statistically valid objective information. Unfortunately the track record in the areas of manpower forecasting and general system prediction using formal procedures is abysmal to say the least. If the subjective input of this study coupled with the more formal quantitative projections gives decision makers a better perspective of the implications of their alternative resource allocations then the study will have achieved some of its aims.

CHAPTER 11

CONCLUSION

An attempt has been made to study the health care system, present and future, with a particular focus on health manpower and training needs over the next two decades. The information contained within this monograph reflects the views and judgements of those who participated in the various aspects of the study. To the extent that the participants form a broad cross-section of influential and senior health care practitioners, educators and administrators, the findings do imply or at least infer a perspective of the health care system which is reasonably widely held.

The report is not an attempt to reinforce a number of self-fulfilling prophecies. It is an attempt to use judgemental information of those providers, designers, administrators and users of the health care system to identify desirable and undesirable possible future trends and occurrences, to highlight perceived likely and unlikely developments and changes and to offer some limited suggestions for health manpower and training.

The detailed picture of the health care future is discussed in Chapter 8 of this report, but it might be useful to further summarise the general findings here :

The health care system will have to deal with a general situation in which there is a deteriorating physical and social environment. The population will be, on average, older with significant increases in the porportion of aged people. Psycho/social problems are likely to increase. The community will continue to be mainly concerned about illness (as opposed to health) and will tend to demand the best curative services available.

It is expected that a higher proportion of the nation's resources will be spent on health, with a figure of over 9% of gross domestic product considered likely by the year 2000.

Government at all levels will become increasingly involved in health care in planning, administration, control (audits and reviews) and in the employment of salaried health professionals. The proportion of government budgets devoted to health will increase markedly.

Health care delivery will shift gradually away from central institutions towards more community and urban based care. Community health centres both public and private, will become the major focus of primary health care. The role of doctors will change from one of omnipotence to one of team leader or director. Even solo practitioners will make use of allied health professionals. The role of these other professionals will be wider and more responsible taking over some of the doctor's functions in diagnosis and treatment.

Health professionals will become more accountable to the public and to their colleagues. Systems of peer reviews of individuals and cost effectiveness studies of treatments and procedures will be implemented. Recurrent education will become an accepted part of the careers of all health professionals and continued registration as a practitioner will not be automatic. It is likely that health professionals will become more militant and that industrial issues such as working conditions may lead to industrial action.

Consumers of health care will become more involved and more critical. This will be assisted by an increase in the level of health education in schools and in the community generally. Involvement may be at the level of planning health care provisions and programs or at the operational level in the form of self help programs.

The participants in this study were sceptical about the ultimate usefulness of trying to better understand the future, because they considered it likely that "the allocation of resources will continue to be on an ad hoc basis, motivated by political opportunism counselled by economic superstition".* We believe that futures studies are

* This issue was submitted as a possible event for evaluation but was dropped in favour of Event 45.

essential if this situation is ever to be changed, for without such investigations, national planning is not even possible.

The uncertainty in which health care resources are being allocated necessitates that an adaptive approach to planning be undertaken. The very nature of uncertainty limits the usefulness of formal quantitative procedures. Analysis of the future using subjective information is not a means of simplifying complex problems, rather it seeks to better understand and represent the complex, uncertain environment in which health planning takes place. By its very nature the future is unknown but if carefully designed subjective information procedures can be added to the more traditional extrapolation approaches then, hopefully, the quality of decision making and planning will improve. The alternative is clear cut:"we can either throw up our hands in despair and wait until we have an adequate theory enabling us to deal with socio-economic and political problems as confidently as we do with problems in physics and chemistry or, we can make the most of an admittedly unsatisfactory situation and try to obtain the relevant intuitive insights of experts and then use their judgements as systematically as possible". (Helmer (1967))

REFERENCES

1 R.H.R. Armstrong and M. Hobson (1973), "Simulation Conference - Methodology and Prescription of Procedures", Inst. of Local Govt. Studies, Univ. of Birmingham.

2 A.D. Bender et al (1969), "Delphic Study Examines Developments in Medicine", Futures, Vol. 1, No. 4.

3 M.F. Bloom (1976), "Time - Dependent Event Cross-Impact Analysis", School of Business and Public Administration, Univ. of Puget Sound, Tacoma, Washington.

4 N.C. Dalkey and O. Helmer (1963), "An Experimental Application of the Delphi Method to the Use of Experts", Mgt. Sc., Vol. 9, No. 3.

5 F.A. Day, J. Tydeman and B. Leoprapai (1976), "Assessment of Population Policy in Thailand: A New Framework of Analysis", Mahidol University Working Papers No. 10, April.

6 E. De Bono (1970), The Use of Lateral Thinking, Penguin.

7 E. De Bono (1971), Lateral Thinking for Management, McGraw-Hill.

8 A.L. Delbecq, A.H. Van de Ven and D.H. Gustafson (1975), Group Techniques for Program Planning, Scott, Foresman and Co.

9 M. Emery (Ed.) (1976), "Searching", Centre for Continuing Education, A.N.U., Occasional Paper No. 12.

10 S. Enzer (1972), "Cross-Impact Techniques in Technology Assessment", Futures, Vol. 4, No. 1.

11 T.J. Gordon and H. Hayward (1968), "Initial Experiments with the Cross Impact Method of Matrix Forecasting", Futures, Vol. 1, No. 2.

12 O. Helmer (1963), The Systematic Use of Expert Judgement in Operations Research, Rand, p.2795.

13 O. Helmer (1967), Analysis of the Future: The Delphi Method, Rand, p.3558.

14 O. Helmer (1977), "Problems in Futures Research", Futures, Vol. 19, No. 1.

15 R.B. Mitchell and J. Tydeman (1977), "Working with Subjective Date or Extending Analysis into Managerial Judgement", Proceedings of Third National A.S.O.R., Adelaide, August.

16 I. Moscovice, P. Armstrong, S. Shortell and R. Bennett (1977), "Health Services Research for Decision Makers: The Use of the Delphi Technique to Determine Health Priorities", J. Health Politics, Vol. 2, No. 3.

REFERENCES (Contd.)

17 A.T. Roper and C.R. Dyer (1975), "A Delphi Study: Health Care Delivery in the Midwest to the Year 2000", Committee for Futures Studies, Indiana University, Indiana.

18 M.E.F. Schoeman and V. Mahajan (1977), "Using the Delphi Method to Assess Community Health Needs", Technological Forecasting and Social Change, Vol. 10.

19 M. Turoff (1970), "The Design of a Policy Delphi", Technological Forecasting and Social Change, Vol. 2.

20 M. Turoff (1972), "An Alternative Approach to Cross-Impact Analysis", Technological Forecasting and Social Change, Vol. 3.

21 J. Tydeman (1977), "Evaluating Alternative Modes of Consumer Participation in Community Health Services", Aust. J. Soc. Iss., Vol. 12, No. 4.

22 J. Tydeman and R.B. Mitchell (1977), "Subjective Information Modelling", Ops. Res. Quart., Vol. 28, No. 1.

APPENDIX 1

Pre-Test of the Project

In May 1977, as part of a series of seminars on Policy Evaluation conducted under the auspices of the Centre for Continuing Education, Australian National University, a two day seminar was held on Alternative Futures and Training Needs in Health Care

The aim of the seminar was to apply a rational systematic approach to resource allocation decision making in a health education and training context by way of a hypothetical case study.

The problem was to identify and evaluate a number of alternative health training policies given a series of objectives for the health care sector and an uncertain future environment. Aspects of the seminar included the derivation of an uncertainty context and the specification of a set of objectives.

The workshop, which involved some nineteen health administrators, educators and practitioners, provided an ideal setting in which to test and refine the methodology. The information derived from the workshop was of value in priming the event generation exercise and subsequent event assessment pilot test.

The findings of the workshop in three general areas have particular relevance to this study: event generation, event assessment and health training policy formulation and some comment is offered on each.

The group was divided into two syndicates and allowed to operate in an unstructured way in order to identify possible changes in the health care environment which may occur over the next ten years and which may be relevant to health manpower and training. Very little prompting was offered although all members of the syndicates were encouraged to offer verbal or written comment.

Issues which were raised were sorted broadly into the framework used in the major study and then a subset of 23 items were arbitrarily selected and evaluated using the event assessment procedures outlined in Chapter 3. (Table 1.1). A framework in which alternative health training and education policies may be generated was derived during the

seminar sessions. The framework which is outlined in Table 1.2 provided a context in which to evaluate the training recommendations which were derived from the input of the major study.

By way of illustration seven policy options for health training suggested by participants of the pre-test are outlined in Table 1.3. The pre-test provided valuable information on the relative merits of approaches to information collection and indicated that, except in very rare situations, the confidence measure, whilst of interest in its own right, did not significantly alter the impact measure. Some knowledge about likely amount of information which may be collected in a session was also attained.

TABLE 1.1

Events selected for assessment by workshop participants

1. Control of and responsibility for training of doctors, nurses and most paramedical personnel vested in ministers of education.
2. Increased participation of women in workforce.
3. Increased relative funding of preventive and curative services within working environment.
4. Increase in drug abuse.
5. The development of a computerised data bank for medical diagnosis.
6. Legalisation of euthanasia.
7. Continuing reduction in GP/population ratio in rural areas (towns up to 3000).
8. Increased postgraduate training in health professions.
9. Increased relative emphasis on recurrent as distinct from one-off training.
10. Common core curriculum for all health professionals.
11. Increased emphasis on ethnic-city medicine, e.g. on Aboriginals.
12. Reduced emphasis on institutional health care.
13. Approximately doubling of medical costs/person because of structural rearrangements.
14. Two million people covered by HMOs.
15. Increase in use of fee-for-service payment for allied health professionals.
16. Fee-for-service will cease to be predominant mode of payment to doctors.
17. The health budget will be stabilised as a proportion of total public spending.
18. Increased importation of medical practitioners.
19. Increased emphasis on "aide-type" manpower training.
20. The introduction of "motivation" as a major criterion in determining admission to medical school.
21. An increase in demarcation disputes between medical practitioners.
22. Legalisation of abortion on demand.
23. Increased consumer participation in health services planning.

TABLE 1.2

Health Policy Profile

1.	Manpower composition (mix and quality)	-	Balance of professional skills
		-	Demand - supply
		-	Rate of entry
2.	Type of training	-	Qualifications
		-	Length
		-	Continuing vs one-off
3.	Responsibility, control and financing	-	Entry to requirements
		-	Source of $
4	Institutional base	-	Workplace
		-	Academe
5.	Content, style and emphasis of training	-	Role
		-	Purpose
		-	Curative/Preventive
6.	Source of manpower	-	Overseas/local

TABLE 1.3

Seven policy options suggested at the pre-test

Dimension	Policy 1 Status Quo	Policy 2	Policy 3	Policy 4	Policy 5	Policy 6	Policy 7
Manpower composition	Doctors 15% Nurses 50% Others 35% Males 20% Females 80% Prof. Orient'n Poss. Surplus	Less Exclusively Professional Focus Incr. Participation by consumers Improved training of teachers in health.			Increased emphasis on 'aide type' manpower. Increased % of nurses in workforce		
Type of training	Emphasis on basic training. Tendency for increased continuing educ'n.		50-75% of cost of training each individual financed by a public loan scheme	Reduced req't for 'hospital only' clinical experience		Re-entry education	Increased Gov't control over entry to all health professions in line with national manpower projections and policies.
Responsibility control finance	Public financing, content controlled by professional organisations					National (Government) Registration of all professionals. + Re-registration at fixed periods of time.	
Institutional base	Doctors - Tert. Ed'n. Nurses - Hospitals Others - Mainly tert.				50% of Nurses trained in CAEs		

Table 1.3 (contd.)

Dimension	Policy 1 Status Quo	Policy 2	Policy 3	Policy 4	Policy 5	Policy 6	Policy 7
Content, style, emphasis	Technological, Biological, Clinical, curative. Vocational specialisation Non-recog. of fringe practitions.	Change ratio of curative→ preventative. Roles less institutionally constrained		Increased emphasis on social, psychological, managerial dimension	Increased emphasis on social, behavioural content		

APPENDIX 2

Pilot Study

As part of the event generation seminars a small event assessment questionnaire entitled, Study of Health Manpower and Training Needs for the Next Two Decades, was distributed and completed. The items, all events, were derived from the Pre-Test held in the A.C.T.

The purposes of the small questionnaire were:

(i) to seek comment on question format and questionnaire layout;
(ii) to provide preliminary information on likely and desirable/ undesirable developments;
(iii) to investigate if there are major differences among professional groups; and
(iv) to compare responses on a number of issues in the pilot study with the responses in the overall study to get some estimate of the criticality of sample size.

A summary of the findings are displayed in Table 2.1. A comparison with the outcome of the total study suggests that, in general, there are few significant differences among the average responses of the various professional groups. In fact, a computation of the overall ratings for each group (as opposed to average values) suggests that there are no significant differences among professions. An additional observation, again with hindsight gained from the total study, was that the average sample size could be much lower and would still reflect the same set of signals i.e. average likelihood and desirability rankings, (Table 2.2).

The set of issues used in the pilot study were suitably modified in the major questionnaire and the method of event assessment was modified marginally in the light of the pilot study findings.

TABLE 2.1

Pilot Study Results

Event No.	Statement	Average Probability	Rank	Average Significance	Rank	Average Desirability	Rank
1.	An increase involvement in the particular problems of aboriginal health.	.706	11	.672	25	.654	8
2.	Inexpensive, motel-type 'para-hospitals' for ambulatory & convalescing patients will handle at least half of all those requiring care in an institution (excluding mental patients).	.492	25	.682	22	.514	11
3.	Recurrent or continuing education becomes an accepted part of the careers of all health professionals.	.763	2	.843	4	.808	2
4.	Switch from Australian to overseas training for expensive health care specialities.	.293	28	.482	28	.173	26
5.	There will be more opportunity for paramedical staff to deal directly with patients, without referral to doctors, with an associated increase in legal accountability.	.704	12	.805	6	.508	12
6.	General practitioners within group practices develop minor specialist emphases.	.724	9	.617	26	.339	17
7.	An increased proportion of resources for health care directed towards preventive and health promotive services.	.733	5	.879	1	.339	1
8.	There will be common initial education for all health professionals followed by specialised training.	.412	27	.676	23	.309	18

Table 2.1 (Contd.)

Event No.	Statement	Average Probability	Rank	Average Significance	Rank	Average Desirability	Rank
9	All health training contain a significant proportion of social/ psychological/managerial content.	.702	13	.767	9	.674	7
10.	Introduction of re-registration requirements for all health professionals at frequent intervals.	.513	24	.702	19	.504	13
11.	An increase in consumer self sufficiency in regard to health.	.517	23	.767	10	.689	6
12.	Health professionals will cease to be regarded as vocationally altruistic.	.635	19	.575	27	.113	24
13.	Health care diagnosis becomes more mechanised.	.692	16	.674	24	.091	23
14.	Health care system makes increased use of sub-professional staff, i.e. "aide" type categories.	.752	3	.779	8	.392	16
15.	The proportion of health services controlled by the public sector will increase.	.727	7	.746	14	.186	20
16.	Health education becomes a recognised discipline in high schools.	.647	18	.759	11	.722	5
17.	Continuation of the relative scarcity of medical manpower in rural areas.	.709	10	.750	13	.570	28
18.	Fee-for-service continues to be the predominant mode of payment of doctors.	.696	15	.705	18	.147	25

Table 2.1 (Contd.)

Event No.	Statement	Average Probability	Rank	Average Significance	Rank	Average Desirability	Rank
19.	Greater community awareness of the health system leads to a more efficient use of health care services.	.551	21	.815	5	.748	4
20.	Health maintenance organisations established in major urban areas.	.573	20	.697	20	.487	14
21.	Non-reimbursable cost of health care continues to increase.	.682	7	.716	16	.362	27
22.	Health personnel will be trained to work as part of a multi-disciplinary team.	.724	8	.846	3	.767	3
23.	Patient medical histories held on centralised computer banks and available to registered health professionals.	.529	22	.686	21	.115	21
24.	Misuse of non-prescribed drugs by the community will become a major concern of the health care system.	.751	4	.802	7	.022	22
25.	Legislation will be passed for the registration and licensing of all health professionals.	.727	6	.708	17	.517	10
26.	Nurse education moves to Colleges of Advanced Education.	.700	14	.737	15	.207	19
27.	An increased community need for mental and social rehabilitation.	.791	1	.851	2	.580	9
28.	The academic criteria for admission to medical schools will be modification by criteria based on motivation and personality.	.468	26	.759	12	.466	15

TABLE 2.2

Comparison between Pilot Study and Major Event Assessment of Average Probability Responses for Comparable Events*

Pilot Study No.	Event Assessment No.	Event Statement	Average Response	
			Pilot Study	Full Study
2	11	Inexpensive, motel-type 'para-hospitals' for ambulatory and convalescing patients will handle at least half of all those requiring care in an institution (excluding mental patients).	.49	.54
3	59	Recurrent or continuing education becomes an accepted part of the careers of all health professionals.	.76	.79
8	38	There will be common initial education for all health professionals followed by specialised training.	.41	.42
13	84	Health care diagnosis becomes more mechanised.	.69	.65
14	89	Health care system makes increased use of sub-professional staff, i.e. "aide" type categories.	.75	.75
16	35	Health education becomes a recognised discipline in high schools.	.65	.69
17	78	Continuation of the relative scarcity of medical manpower in rural areas.	.71	.67
26	79	Nurse education moves to Colleges of Advanced Education.	.70	.69
28	95	The academic criteria for admission to medical schools will be modification by criteria based on motivation and personality.	.47	.56

* There were nine questions in the pilot study which were replicated identically in the Event Assessment questionnaire. These are included above.

APPENDIX 3

Letter of Invitation to Event Generation Seminars

28 July 1977

The Standing Committee on Health Manpower Training of the Hospitals and Health Services Commission has commissioned a research and evaluation project with clearly defined objectives, viz. to assess future manpower needs in Australia in the next decade. This study seeks to obtain some firm ideas of what Australian health care experts believe to be the most likely and most desirable trends of health care in Australia, including the needs both for different types of manpower and for efficient and effective manpower training programs involving health professionals. The project also seeks to obtain expert inputs on possible social, economic, political and technological changes which influence the direction of health care in Australia over the next decade.

We are writing to you as a person involved in health care or a related field, whose independent judgements and opinions are vital if these important decisions are to be made on the best possible basis.

It is proposed to conduct the study as follows: first, a half-day seminar workshop will be undertaken in each of the capital cities at which our research will be outlined to a small number of health care personnel chosen from a variety of fields. They will be invited to attend and to identify or generate likely future social changes, likely changes in the process of health care, and likely changes in methods of financing, planning and co-ordination in the next decade. The findings of this phase of the study will form the core of the input to the second stage, which will involve a mail questionnaire asking participants to evaluate the possible changes identified. Finally, a follow-up seminar will be conducted in which the information from the earlier stages will be related specifically to the present health care system and ideas sought on existing and proposed health manpower and training schemes.

All aspects of the study which involve individual assessments will be treated with strict confidence. Anonymity is essential in our research approach, and we are going to some lengths to maintain anonymity of response. A summary of the aggregate findings will be made available to you on completion of the study.

We seek your assistance in this project and invite you to participate in the workshop to be held at Clunies Ross Memorial Foundation, Auditorium No. 3, Ground floor, 191 Royal Pde., Parkville, Melbourne, from 2.00-5.00 p.m. on Wednesday, 24 August 1977.

If you wish to participate in the workshop and are able to do so, please indicate on the enclosed slip. If your attendance is not possible you may nevertheless like to be involved in the evaluation by mail questionnaire. This will require approximately two hours of concentrated effort and should be conducted in about 6-8 weeks from the date of this letter.

Thanking you in anticipation of your support for this project.

John Tydeman

John Tydeman
RESEARCH DIRECTOR

Encl.

APPENDIX 4

Event Assessment Instructions

Instructions to participants

General

The information contained in this phase of the study has been derived from a series of seminars which were held in all capital cities. Some five hundred people have been invited to contribute in this aspect of the project and we estimate that completion of the enclosed questionnaire will require about one hour of concentrated effort.

You will observe that your questionnaire has been coded. Although individual responses are totall anonymous we are interested in the views of different groups of participants. Thus, we have classified people (on the basis of information they have provided or we have obtained) according to state and broad occupational area. If you disagree with this classification please amend the Event Assessment Return.

Even if you choose not to complete the questionnaire please send the Event Assessment Return in the enclosed envelope.

Specific Instructions

As you are aware the broad context of the study is health manpower and training needs over the next two decades. The questionnaire comprises three sections: Events, Trends and Projections, and separate instructions are included for each.

Section 1 - Events

This is by far the most detailed section and as such requires the most comprehensive set of instructions.

For each of the events which are included on the questionnaire you are asked to give your individual judgement in respect of the following measures: probability of occurrence within twenty years, confidence or reliability in your estimate, significance or importance given that occurrence takes place, and desirability of occurrence.

A. Probability of occurrence

Give your own assessment of the likelihood of the event occurring within the next twenty years. There are seven categories from which to choose ranging from the lowest probability (or likelihood) to the highest probability. The categories are: certain not to occur, very unlikely, unlikely, about fifty-fifty chance, likely, very likely and certain to occur.

B. Confidence of probability estimate

Give your assessment of the degree of confidence or reliability you

would place on your subjective probability estimate for each event. Five categories are provided which range from lowest reliability to highest reliability. The categories are:

(i)	very unreliable	- your response is little better than a guess - no real knowledge of the area.
(ii)	unreliable	- area is of general interest but you have little confidence in your response.
(iii)	unknown reliability	- informed layman but no special knowledge.
(iv)	reliable	- some positive confidence, some supporting evidence.
(v)	very reliable	- very confident, informed judgement.

C. Significance of the event

Give your view as to the importance of each event for health manpower and training if it occurs within the next twenty years. This is not related to the probability nor the desirability of its occurrence. The following categories are available:

(i) Event unimportant - no measurable effect.

(ii) Event of little importance but not a decisive factor.

(iii) Event of some importance - is relevant to the question.

(iv) Event important - very relevant - widespread consequences.

(v) Event very important - will cause major changes and serious repercussions if it occurs.

D. Desirability

Give your view as to the desirability of each event for the health care system if it occurs within the next twenty years. The following scale will be used:

(i)	very undesirable	- will have a major negative effect, be extremely harmful.
(ii)	undesirable	- will have a negative effect, harmful.
(iii)	neither desirable nor undesirable	- will have equal positive and negative effects or desirability is an irrelevant criterion.
(iv)	desirable	- will have a positive effect, of some value.
(v)	very desirable	- will have a major positive effect, be extremely valuable.

You need not respond to those questions about which you feel totally unqualified to answer but for all other events please reflect your knowledge of the question in your confidence rating.

Please record your judgements on the Event Assessment Return forms provided. Note that each event is coded down one column of the sheet. You may find it helpful to use the enclosed template to focus on the correct column.

Section 2 - Trends

For each of the statements on general trends included on the questionnaire you are asked to give your individual judgement with respect to first, the direction of the stated trend (i.e. decrease, stay the same or increase) and second, the desirability of an increase in the trend.

As with Events you are requested to record your judgements on the forms provided.

Section 3 - Projections

A small number (eight in total) of statements are included for which you are asked to provide a range of estimates (as to the likely value in twenty years time). The current value is stated in each case and we have suggested that you provide three estimates: a lowest estimate of the value in twenty years, your best estimate, i.e. the value which you believe is most likely and a highest estimate of the required outcome. Your best estimate may coincide with either of the "extreme" judgements.

Additional Comments

At the end of the questionnaire we have enclosed a blank page on which we encourage you to add any comments you wish to make either about the events, trends or projections which have been included or more desirably (from our point of view) about other future changes which you perceive to be of significance to health manpower and training but which have not been included.

Thank you again for your participation.

APPENDIX 5

Sample Pages of Questionnaire*

EVENT ASSESSMENT RETURN

YOUR CLASSIFICATION CODE

(Please amend if you wish)

CODING SCHEME

A. Health Practitioners

- A1 Doctors
- A2 Nurses
- A3 Other Health Professionals.

B. Health Educators and Researchers

- B1 Hospital Teaching only
- B2 University Staff
- B3 C.A.E. Staff
- B4 Primarily Medical Research.

C. Administrator

- C1 Hospital, Health Centres, etc.
- C2 Government Departments of Health
- C3 Government Departments of Education
- C4 Professional Organisations.

D. Other

- D1 Academic Sociologist, Economists, Planners, etc.
- D2 Consumers and other members of the public
- D3 Politicians.

STATE

2	N.S.W.	6	A.C.T.
3	VIC.	7	W.A.
4	QLD.	8	TAS.
5	S.A.	9	N.T.

PLEASE RETURN BY

* A complete list of all items included in the study is contained in Chapter 6.

EVENT ASSESSMENT RETURN

EVENT No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PROBABILITY																
Won't Occur	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Very Unlikely	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Unlikely	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Fifty-Fifty	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Likely	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Very Likely	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Certain	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
CONFIDENCE																
Very Unreliable	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Unreliable	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Unknown Reliability	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Reliable	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Very Reliable	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
SIGNIFICANCE																
No Importance	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Little Importance	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Some Importance	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Important	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Very Important	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
DESIRABILITY																
Very Undesirable	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Undesirable	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Neither	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Desirable	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Very Desirable	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

SECTION 2 - TRENDS

No.	Item	Your Estimate of the Trend					For this trend, which direction (if any) is DESIRABLE		
		Decrease Significantly	Decrease Marginally	No Change	Increase Marginally	Increase Significantly	Decrease	Neither	Increase
1.	Government involvement in health administration and planning.	☐	☐	☐	☐	☐	☐	☐	☐
2.	The proportion of health costs met directly by the consumer.	☐	☐	☐	☐	☐	☐	☐	☐
3.	Role of local government authorities in the control and coordination of health services.	☐	☐	☐	☐	☐	☐	☐	☐
4.	Dual funding.	☐	☐	☐	☐	☐	☐	☐	☐
5.	Public Sector health expenditure as a proportion of budget.	☐	☐	☐	☐	☐	☐	☐	☐
6.	Medical research funding from all sources as a proportion of gross domestic product	☐	☐	☐	☐	☐	☐	☐	☐
7.	Percentage of general practice which is fee-for-service	☐	☐	☐	☐	☐	☐	☐	☐
8.	Percentage of health professionals who are salaried.	☐	☐	☐	☐	☐	☐	☐	☐
9.	Percentage of married women health professionals returning to workforce as soon as possible after child bearing.	☐	☐	☐	☐	☐	☐	☐	☐

SECTION 3 - PROJECTIONS

No.	ITEM	Your estimates of the value reached in 20 years		
		Lowest	Most Likely	Highe
1.	Total cost of health service as a percentage of Gross Domestic Product (current value is approximately 6½%).	☐	☐	☐
2.	Total cost of education as a percentage of Gross Domestic Product (current value is approximately 5½%).	☐	☐	☐
3.	Percentage of women trained in traditionally male professions (1975 graduates in medicine and dentistry combined contained 23% female).	☐	☐	☐
4.	Percentage of men trained in traditionally female professions, (1974 estimated work-force in nursing, physiotherapy and occupa-tional therapy contained 4% males).	☐	☐	☐
5.	Hospital accommodation per capita, i.e. bed ratios (current value is stated to be about 6.5 beds per 1000).	☐	☐	☐
6.	Average length of stay in hospital (current value is estimated to be around 10 days).	☐	☐	☐
7.	Health services research expenditure as a percentage of total health care expenditure (current value is around .06%).	☐	☐	☐
8.	General practitioners/population ratio (current value is estimated to be around 1 doctor per 700 people).	☐	☐	☐

APPENDIX 6

DETAILED ASSESSMENT LISTINGS

Part 1. Average assessments from all respondents.

Part 2. Average assessments from health practitioners (Group A).

Part 3. Average assessments from health educators and researchers (Group B).

Part 4. Average assessments from health administrators (Group C).

Part 5. Average assessments from other social experts and consumers (Group D).

Each part contains listings of the 99 events, 52 trends and 8 projections assessed giving various statistical measures for each issue.

Explanation of Terms

(a) Events

For each measure, i.e., probability, confidence, significance, desirability and impact, the table shows :

No. = the number of respondents

Ave. = the arithmetic mean or average responses

SD = the sample standard deviation

Rank = the ranked position out of 99 in decreasing order of magnitude (1 is largest).

(b) Trends

For each trend the movement frequencies and corresponding state probabilities for each of the five categories :

DS = decrease significantly
DMA = decrease marginally
NONE = no change
IMA = increase marginally
IS = increase significantly.

An average movement (AVE) and standard deviation of the movement (S.D.) is shown.

The desirable movement frequencies are shown for each of the categories :

DECR = decrease desirable
NONE = no change desirable
INCR = increase desirable.

An average desirable movement (DES. AVE.) was also computed.

(c) Projections

For each estimate, low, likely and high, the table shows :

NO. = number of respondents
MEAN = arithmetic mean or average estimate
S.D. = the standard deviation of the estimates.

HEALTH MANPOWER ASSESSMENT. RUN 1 - ALL STATES, ALL GROUPS 196 RESPONDENTS

EVENT NO.	PROBABILITY NO.	PROBABILITY AVE.	PROBABILITY SD	PROBABILITY RANK	CONFIDENCE NO.	CONFIDENCE AVE.	CONFIDENCE SD	CONFIDENCE RANK	SIGNIFICANCE NO.	SIGNIFICANCE AVE.	SIGNIFICANCE SD	SIGNIFICANCE RANK	DESIRABILITY NO.	DESIRABILITY AVE.	DESIRABILITY SD	DESIRABILITY RANK	IMPACT NO.	IMPACT AVE.	IMPACT SD	IMPACT RANK
1	196.	0.544	0.266	73.0	196.	0.642	0.180	36.0	196.	0.739	0.196	25.0	196.	-0.449	0.479	91.0	196.	0.282	0.217	57.0
2	193.	0.574	0.234	70.0	194.	0.540	0.187	89.0	193.	0.732	0.238	29.0	188.	0.133	0.634	61.0	193.	0.233	0.172	76.0
3	193.	0.608	0.258	58.0	194.	0.653	0.203	23.0	192.	0.660	0.237	71.5	191.	-0.353	0.581	84.0	191.	0.282	0.217	58.0
4	194.	0.572	0.275	71.0	193.	0.670	0.202	18.0	193.	0.666	0.227	69.0	193.	-0.130	0.579	77.0	193.	0.261	0.206	66.0
5	195.	0.653	0.268	40.0	195.	0.671	0.201	17.0	193.	0.767	0.208	11.0	193.	-0.523	0.542	94.0	193.	0.361	0.261	23.0
6	194.	0.610	0.260	57.0	193.	0.619	0.175	52.0	194.	0.742	0.191	23.0	194.	-0.052	0.681	73.0	193.	0.293	0.200	53.0
7	195.	0.630	0.263	49.0	194.	0.696	0.167	7.0	194.	0.812	0.176	2.0	194.	-0.564	0.537	95.0	193.	0.368	0.236	17.0
8	192.	0.710	0.200	17.0	193.	0.654	0.200	22.0	193.	0.665	0.219	70.0	193.	0.531	0.448	17.0	192.	0.351	0.236	28.0
9	194.	0.672	0.220	33.0	193.	0.677	0.170	12.0	193.	0.769	0.183	9.0	193.	0.443	0.511	32.0	193.	0.379	0.230	15.0
10	190.	0.462	0.234	89.0	190.	0.507	0.191	95.0	189.	0.554	0.241	99.0	189.	0.175	0.510	58.0	189.	0.150	0.146	95.0
11	192.	0.538	0.253	76.0	192.	0.594	0.198	73.0	192.	0.716	0.205	40.0	190.	0.500	0.459	22.0	192.	0.246	0.187	71.0
12	193.	0.716	0.236	12.0	193.	0.646	0.207	30.5	193.	0.710	0.230	44.0	193.	0.528	0.467	18.0	193.	0.367	0.250	18.0
13	190.	0.627	0.282	52.0	189.	0.646	0.198	33.0	190.	0.792	0.196	4.0	190.	0.000	0.684	70.0	189.	0.343	0.245	32.0
14	194.	0.728	0.207	11.0	194.	0.697	0.180	6.0	194.	0.755	0.168	16.0	194.	0.451	0.475	29.0	194.	0.413	0.250	7.0
15	193.	0.662	0.235	36.0	193.	0.674	0.201	15.0	192.	0.745	0.218	21.0	192.	0.544	0.467	15.0	192.	0.364	0.235	20.0
16	189.	0.571	0.258	65.0	188.	0.657	0.209	21.0	188.	0.690	0.228	53.5	188.	0.391	0.511	39.0	188.	0.306	0.234	49.0
17	194.	0.675	0.234	22.0	194.	0.649	0.237	27.5	194.	0.710	0.231	43.0	194.	0.580	0.460	11.0	194.	0.374	0.275	16.0
18	196.	0.606	0.250	60.0	196.	0.625	0.174	48.5	195.	0.701	0.224	48.0	193.	0.412	0.501	36.0	195.	0.292	0.220	54.0
19	193.	0.636	0.268	45.0	192.	0.639	0.223	37.5	192.	0.660	0.223	71.5	193.	-0.098	0.507	75.0	191.	0.307	0.251	48.0
20	193.	0.632	0.246	46.0	193.	0.639	0.214	39.0	193.	0.677	0.233	64.0	193.	0.495	0.429	24.0	193.	0.315	0.242	44.0
21	194.	0.654	0.221	39.0	194.	0.624	0.185	50.0	194.	0.640	0.230	80.5	194.	0.348	0.464	46.0	194.	0.291	0.214	55.0
22	190.	0.355	0.261	96.0	190.	0.608	0.209	61.0	189.	0.648	0.204	78.0	190.	0.032	0.561	68.0	189.	0.154	0.181	94.0
23	195.	0.836	0.191	1.0	194.	0.707	0.204	4.0	195.	0.760	0.219	14.0	193.	0.080	0.602	65.0	194.	0.485	0.282	2.0
24	192.	0.643	0.253	43.0	192.	0.639	0.207	37.5	193.	0.637	0.239	82.0	193.	0.334	0.497	48.0	191.	0.308	0.245	45.0
25	192.	0.702	0.252	20.0	193.	0.661	0.212	20.0	193.	0.699	0.254	49.5	193.	0.350	0.563	45.0	192.	0.361	0.271	22.0

HEALTH MANPOWER ASSESSMENT. RUN 1 = ALL STATES, ALL GROUPS 196 RESPONDENTS

EVENT NO.	PROBABILITY NO.	PROBABILITY AVE.	PROBABILITY SD	PROBABILITY RANK	CONFIDENCE NO.	CONFIDENCE AVE.	CONFIDENCE SD	CONFIDENCE RANK	SIGNIFICANCE NO.	SIGNIFICANCE AVE.	SIGNIFICANCE SD	SIGNIFICANCE RANK	DESIRABILITY NO.	DESIRABILITY AVE.	DESIRABILITY SD	DESIRABILITY RANK	IMPACT NO.	IMPACT AVE.	IMPACT SD	IMPACT RANK
26	195.	0.673	0.248	32.0	194.	0.675	0.197	14.0	195.	0.678	0.222	63.0	195.	0.072	0.601	67.0	194.	0.355	0.265	25.0
27	191.	0.619	0.248	55.0	191.	0.631	0.209	43.0	190.	0.795	0.197	3.0	191.	-0.366	0.666	85.0	190.	0.336	0.244	35.0
28	189.	0.601	0.237	61.0	190.	0.551	0.244	87.0	190.	0.687	0.242	55.0	190.	-0.571	0.449	96.0	189.	0.258	0.213	68.0
29	194.	0.588	0.260	67.0	193.	0.608	0.213	62.0	194.	0.704	0.216	47.0	193.	-0.370	0.484	86.0	194.	0.280	0.232	59.0
30	193.	0.608	0.246	59.0	192.	0.559	0.238	85.5	193.	0.652	0.249	76.0	192.	0.404	0.525	38.0	192.	0.267	0.228	64.0
31	188.	0.733	0.191	9.0	188.	0.634	0.245	41.0	188.	0.738	0.210	27.0	187.	0.580	0.392	10.0	188.	0.388	0.257	10.0
32	172.	0.570	0.251	72.0	174.	0.578	0.241	77.0	172.	0.628	0.262	86.0	171.	0.339	0.480	47.0	172.	0.266	0.257	65.0
33	187.	0.654	0.225	38.0	187.	0.615	0.209	54.0	187.	0.718	0.198	37.0	187.	0.374	0.536	41.0	187.	0.321	0.225	42.0
34	192.	0.677	0.205	31.0	193.	0.690	0.179	8.0	193.	0.628	0.258	85.0	193.	0.088	0.536	64.0	192.	0.318	0.228	43.0
35	194.	0.697	0.201	23.0	194.	0.595	0.211	71.0	194.	0.715	0.235	41.0	194.	0.621	0.372	7.0	194.	0.332	0.229	37.0
36	195.	0.670	0.263	62.0	195.	0.614	0.201	55.0	195.	0.646	0.257	79.0	194.	0.407	0.562	37.0	195.	0.269	0.228	63.0
37	195.	0.643	0.234	42.0	195.	0.609	0.222	59.0	195.	0.595	0.264	93.0	194.	-0.162	0.579	79.0	195.	0.246	0.206	70.0
38	196.	0.419	0.246	93.0	196.	0.603	0.214	66.0	196.	0.654	0.234	74.0	196.	0.184	0.593	57.0	196.	0.172	0.162	90.0
39	178.	0.579	0.210	63.0	181.	0.521	0.252	93.0	178.	0.570	0.226	96.0	180.	0.369	0.370	43.0	178.	0.224	0.203	79.0
40	179.	0.451	0.248	90.0	181.	0.501	0.249	97.0	178.	0.591	0.220	94.0	175.	-0.200	0.450	81.0	178.	0.140	0.152	96.0
41	194.	0.627	0.231	53.0	194.	0.575	0.199	79.0	193.	0.672	0.226	66.0	193.	0.122	0.580	62.0	193.	0.283	0.216	56.0
42	189.	0.798	0.173	4.0	192.	0.685	0.222	9.0	192.	0.754	0.197	17.5	192.	0.654	0.324	5.0	189.	0.451	0.262	4.0
43	193.	0.426	0.272	92.0	194.	0.613	0.200	56.0	193.	0.715	0.240	42.0	193.	-0.288	0.665	82.0	192.	0.193	0.173	87.0
44	195.	0.715	0.215	14.0	195.	0.645	0.205	34.0	194.	0.738	0.223	26.0	195.	0.533	0.424	16.0	194.	0.365	0.241	19.0
45	193.	0.716	0.207	13.0	193.	0.637	0.233	40.0	192.	0.790	0.230	5.0	192.	-0.625	0.487	97.0	192.	0.390	0.258	9.0
46	190.	0.578	0.222	64.0	190.	0.521	0.217	92.0	190.	0.630	0.239	84.0	190.	0.413	0.446	35.0	190.	0.222	0.174	80.0
47	192.	0.541	0.242	75.0	192.	0.559	0.224	85.5	192.	0.680	0.205	60.0	192.	0.448	0.385	30.0	192.	0.253	0.214	69.0
48	195.	0.691	0.219	23.0	195.	0.685	0.213	10.0	194.	0.719	0.210	36.0	195.	0.438	0.484	34.0	194.	0.380	0.259	14.0
49	189.	0.672	0.255	54.0	190.	0.605	0.216	64.0	188.	0.749	0.201	20.0	188.	0.386	0.554	40.0	188.	0.299	0.208	51.0
50	191.	0.617	0.232	56.0	193.	0.650	0.218	26.0	192.	0.728	0.189	31.0	191.	0.304	0.501	49.0	190.	0.323	0.232	41.0

HEALTH MANPOWER ASSESSMENT, RUN 1 - ALL STATES, ALL GROUPS 196 RESPONDENTS

EVENT NO.	PROBABILITY NO.	PROBABILITY AVE.	PROBABILITY SD	PROBABILITY RANK	CONFIDENCE NO.	CONFIDENCE AVE.	CONFIDENCE SD	CONFIDENCE RANK	SIGNIFICANCE NO.	SIGNIFICANCE AVE.	SIGNIFICANCE SD	SIGNIFICANCE RANK	DESIRABILITY NO.	DESIRABILITY AVE.	DESIRABILITY SD	DESIRABILITY RANK	IMPACT NO.	IMPACT AVE.	IMPACT SD	IMPACT RANK
51	191.	0.530	0.233	81.0	192.	0.535	0.205	90.0	191.	0.569	0.222	97.0	191.	0.076	0.489	66.0	191.	0.186	0.159	88.0
52	188.	0.632	0.205	47.0	188.	0.560	0.232	84.0	187.	0.679	0.192	61.0	187.	0.551	0.341	14.0	187.	0.277	0.221	61.0
53	191.	0.553	0.258	76.0	192.	0.576	0.215	78.0	191.	0.634	0.212	83.0	191.	0.223	0.492	55.0	191.	0.217	0.181	82.0
54	193.	0.713	0.203	16.0	194.	0.646	0.226	32.0	193.	0.687	0.229	56.0	193.	0.526	0.344	19.0	193.	0.360	0.246	24.0
55	192.	0.521	0.227	83.0	193.	0.519	0.230	94.0	192.	0.615	0.228	90.0	189.	0.257	0.506	52.0	192.	0.205	0.191	86.0
56	190.	0.541	0.270	77.0	191.	0.609	0.218	60.0	190.	0.684	0.231	58.0	189.	0.026	0.511	69.0	189.	0.245	0.220	72.0
57	192.	0.732	0.210	10.0	193.	0.611	0.244	57.0	192.	0.684	0.247	59.0	192.	0.487	0.440	26.0	192.	0.341	0.253	33.0
58	195.	0.742	0.178	5.0	195.	0.677	0.225	13.0	195.	0.727	0.201	32.0	194.	0.577	0.320	12.0	195.	0.416	0.273	6.0
59	194.	0.793	0.175	3.0	195.	0.738	0.180	1.0	195.	0.822	0.193	1.0	195.	0.790	0.281	1.0	194.	0.512	0.263	1.0
60	189.	0.704	0.218	19.0	190.	0.618	0.233	53.0	189.	0.685	0.224	57.0	189.	0.571	0.362	13.0	189.	0.345	0.268	30.0
61	191.	0.413	0.266	94.0	192.	0.530	0.227	91.0	191.	0.624	0.274	88.0	191.	0.136	0.643	60.0	191.	0.155	0.188	93.0
62	191.	0.495	0.264	88.0	192.	0.603	0.227	67.5	190.	0.672	0.220	65.0	190.	-0.139	0.506	78.0	190.	0.219	0.211	81.0
63	193.	0.696	0.219	20.0	192.	0.671	0.180	16.0	192.	0.766	0.189	12.0	192.	0.497	0.469	23.0	192.	0.385	0.240	13.0
64	189.	0.572	0.259	82.0	189.	0.626	0.210	45.0	188.	0.613	0.238	91.0	188.	-0.434	0.515	90.0	188.	0.211	0.184	84.0
65	195.	0.345	0.253	97.0	195.	0.564	0.219	81.0	194.	0.640	0.254	80.5	194.	-0.101	0.641	76.0	194.	0.131	0.143	98.0
66	178.	0.629	0.227	50.0	182.	0.493	0.252	98.0	178.	0.577	0.261	95.0	178.	0.191	0.522	56.0	178.	0.207	0.212	85.0
67	176.	0.296	0.195	99.0	181.	0.452	0.234	99.0	177.	0.569	0.283	98.0	177.	-0.424	0.494	88.0	176.	0.080	0.088	99.0
68	178.	0.447	0.251	86.0	182.	0.505	0.224	96.0	179.	0.626	0.250	87.0	179.	-0.084	0.613	74.0	178.	0.163	0.158	91.0
69	192.	0.477	0.256	87.0	192.	0.603	0.205	67.5	192.	0.725	0.210	33.0	192.	0.240	0.577	53.0	192.	0.226	0.197	78.0
70	194.	0.598	0.253	83.0	194.	0.647	0.192	29.0	192.	0.671	0.247	67.0	192.	-0.510	0.468	92.0	192.	0.236	0.215	75.0
71	192.	0.694	0.189	28.0	192.	0.599	0.210	70.0	192.	0.698	0.225	52.0	192.	0.612	0.360	8.0	192.	0.325	0.241	40.0
72	191.	0.533	0.234	80.0	191.	0.562	0.198	83.0	190.	0.622	0.232	89.0	191.	0.236	0.536	54.0	190.	0.215	0.184	83.0
73	190.	0.666	0.237	35.0	191.	0.594	0.231	72.0	188.	0.690	0.208	53.5	187.	0.267	0.502	51.0	188.	0.308	0.234	46.0
74	192.	0.641	0.252	44.0	193.	0.633	0.194	42.0	192.	0.759	0.181	15.0	192.	0.445	0.538	31.0	192.	0.335	0.234	36.0
75	192.	0.304	0.208	98.0	192.	0.651	0.196	25.0	188.	0.729	0.200	30.0	183.	-0.415	0.503	87.0	188.	0.139	0.128	97.0

HEALTH MANPOWER ASSESSMENT. RUN 1 - ALL STATES, ALL GROUPS 196 RESPONDENTS

EVENT NO.	PROBABILITY NO.	AVE.	SD	RANK	CONFIDENCE NO.	AVE.	SD	RANK	SIGNIFICANCE NO.	AVE.	SD	RANK	DESIRABILITY NO.	AVE.	SD	RANK	IMPACT NO.	AVE.	SD	RANK
76	191.	0.535	0.252	79.0	191.	0.579	0.234	76.0	190.	0.774	0.180	8.0	190.	0.682	0.363	3.0	190.	0.260	0.215	67.0
77	194.	0.746	0.249	6.0	194.	0.720	0.216	3.0	194.	0.749	0.207	19.0	194.	0.374	0.536	42.0	194.	0.431	0.280	5.0
78	194.	0.671	0.227	34.0	194.	0.649	0.197	27.5	192.	0.760	0.182	13.0	193.	-0.627	0.402	98.0	192.	0.344	0.211	31.0
79	193.	0.685	0.224	27.0	194.	0.704	0.189	5.0	192.	0.754	0.203	17.5	192.	-0.031	0.661	71.0	192.	0.387	0.234	11.0
80	194.	0.697	0.223	21.0	194.	0.610	0.232	58.0	194.	0.601	0.270	92.0	194.	0.490	0.386	25.0	194.	0.298	0.247	52.0
81	192.	0.510	0.254	84.0	193.	0.626	0.197	46.5	193.	0.699	0.227	49.5	192.	-0.331	0.534	83.0	192.	0.238	0.195	74.0
82	190.	0.438	0.228	91.0	189.	0.601	0.194	69.0	189.	0.655	0.216	73.0	187.	-0.521	0.456	93.0	188.	0.177	0.148	89.0
83	192.	0.713	0.209	15.0	192.	0.625	0.217	48.5	192.	0.717	0.242	38.0	192.	0.664	0.386	4.0	192.	0.363	0.253	21.0
84	188.	0.652	0.216	41.0	188.	0.606	0.213	63.0	188.	0.698	0.192	51.0	188.	-0.048	0.556	72.0	188.	0.307	0.218	47.0
85	189.	0.634	0.226	46.0	190.	0.663	0.177	19.0	190.	0.788	0.178	6.0	190.	0.705	0.366	2.0	189.	0.349	0.215	29.0
86	193.	0.742	0.195	8.0	193.	0.652	0.211	24.0	193.	0.742	0.213	24.0	193.	0.630	0.365	6.0	193.	0.387	0.242	12.0
87	191.	0.629	0.235	51.0	191.	0.588	0.211	74.0	191.	0.720	0.213	35.0	191.	0.301	0.563	50.0	191.	0.303	0.232	50.0
88	191.	0.471	0.227	95.0	191.	0.563	0.214	82.0	191.	0.668	0.235	68.0	190.	0.105	0.550	63.0	191.	0.159	0.162	92.0
89	190.	0.745	0.161	7.0	190.	0.683	0.188	11.0	190.	0.717	0.198	39.0	190.	0.353	0.449	44.0	190.	0.395	0.228	8.0
90	192.	0.808	0.180	2.0	192.	0.728	0.202	2.0	192.	0.721	0.228	34.0	192.	0.440	0.439	33.0	192.	0.465	0.278	3.0
91	189.	0.590	0.222	66.0	189.	0.542	0.201	88.0	189.	0.653	0.220	75.0	189.	0.487	0.376	27.0	188.	0.232	0.179	77.0
92	193.	0.692	0.195	30.0	193.	0.646	0.189	30.5	192.	0.710	0.215	45.0	192.	0.609	0.320	9.0	192.	0.338	0.216	34.0
93	186.	0.585	0.245	68.0	186.	0.585	0.214	75.0	184.	0.732	0.183	28.0	184.	-0.432	0.469	89.0	184.	0.270	0.200	62.0
94	191.	0.692	0.237	29.0	191.	0.605	0.220	65.0	191.	0.767	0.205	10.0	191.	-0.641	0.481	99.0	191.	0.355	0.262	26.0
95	192.	0.562	0.251	74.0	193.	0.626	0.231	46.5	192.	0.779	0.204	7.0	192.	0.516	0.537	21.0	192.	0.280	0.202	60.0
96	195.	0.697	0.258	24.0	195.	0.644	0.201	35.0	195.	0.744	0.235	22.0	195.	0.523	0.527	20.0	195.	0.352	0.250	27.0
97	192.	0.640	0.226	37.0	193.	0.631	0.205	44.0	193.	0.709	0.234	46.0	190.	-0.187	0.541	80.0	192.	0.328	0.239	39.0
98	193.	0.582	0.222	69.0	194.	0.567	0.203	80.0	193.	0.679	0.217	62.0	194.	0.162	0.543	59.0	192.	0.242	0.185	73.0
99	185.	0.709	0.190	18.0	185.	0.620	0.224	51.0	184.	0.651	0.232	77.0	183.	0.459	0.380	28.0	184.	0.331	0.240	38.0

HEALTH MANPOWER ASSESSMENT. RUN 1 - ALL STATES, ALL GROUPS TREND ANALYSIS

TREND NO.	MOVEMENT FREQUENCIES DS	DMA	NONE	IMA	IS	STATE PROBABILITIES DS	DMA	NONE	IMA	IS	MOVEMENT AVE.	S.D.	DES.MOVE.FREQ. DECR	NONE	INCR	DES. AVE.
1	2	6	8	41	138	0.0103	0.0308	0.0410	0.2103	0.7077	0.7513	0.4186	27	40	127	0.5155
2	24	33	13	76	48	0.1237	0.1701	0.0670	0.3918	0.2474	0.1902	0.6209	70	64	59	-0.0570
3	11	22	57	78	24	0.0573	0.1146	0.2969	0.4063	0.1250	0.1552	0.4529	41	57	93	0.2723
4	16	21	38	50	45	0.0941	0.1235	0.2235	0.2941	0.2647	0.2218	0.5893	51	59	59	0.0473
5	4	16	14	78	77	0.0212	0.0847	0.0741	0.4127	0.4074	0.4847	0.4883	44	47	97	0.2819
6	12	24	41	93	17	0.0642	0.1283	0.2193	0.4973	0.0909	0.1374	0.4388	12	31	143	0.7043
7	22	68	44	39	17	0.1158	0.3579	0.2316	0.2053	0.0895	-0.0721	0.5007	95	55	40	-0.2695
8	3	11	9	95	75	0.0155	0.0570	0.0466	0.4922	0.3886	0.5036	0.4471	18	47	127	0.5677
9	2	3	12	92	84	0.0104	0.0155	0.0622	0.4767	0.4352	0.5632	0.4156	23	46	123	0.5208
10	0	11	11	73	99	0.0000	0.0567	0.0567	0.3763	0.5103	0.6062	0.4264	29	47	117	0.4560
11	2	3	16	67	106	0.0103	0.0155	0.0825	0.3454	0.5464	0.6351	0.4311	120	34	38	-0.4271
12	0	1	23	96	68	0.0000	0.0053	0.1223	0.5106	0.3617	0.5133	0.3803	69	91	25	-0.2378
13	0	5	14	60	115	0.0000	0.0258	0.0722	0.3093	0.5928	0.6778	0.4043	8	34	151	0.7409
14	31	75	18	46	20	0.1632	0.3947	0.0947	0.2421	0.1053	-0.1037	0.5612	159	17	13	-0.7725
15	0	3	6	82	101	0.0000	0.0156	0.0313	0.4271	0.5260	0.6495	0.3796	169	13	9	-0.8377
16	0	3	10	89	87	0.0000	0.0159	0.0529	0.4709	0.4603	0.5968	0.3846	19	37	129	0.5946
17	7	17	43	94	32	0.0369	0.0881	0.2228	0.4870	0.1658	0.2492	0.4379	4	15	173	0.8802
18	1	9	50	106	27	0.0052	0.0466	0.2591	0.5492	0.1399	0.2855	0.3423	17	54	120	0.5393
19	5	43	27	75	44	0.0258	0.2216	0.1392	0.3866	0.2268	0.2505	0.4945	166	15	12	-0.7979
20	2	22	21	71	77	0.0104	0.1140	0.1088	0.3679	0.3990	0.4648	0.4865	176	5	11	-0.8594
21	2	32	25	66	66	0.0105	0.1675	0.1309	0.3455	0.3455	0.3885	0.5013	182	1	8	-0.9110
22	1	5	20	71	95	0.0052	0.0260	0.1042	0.3698	0.4948	0.5927	0.4293	187	0	4	-0.9581
23	2	6	34	89	52	0.0109	0.0328	0.1858	0.4863	0.2842	0.4093	0.4175	74	70	39	-0.1913
24	40	124	20	7	2	0.2073	0.6425	0.1036	0.0363	0.0104	-0.3788	0.3678	153	29	10	-0.7448
25	35	57	39	44	16	0.1832	0.2984	0.2042	0.2304	0.0838	-0.1199	0.5479	112	45	32	-0.4233
26	1	11	13	88	78	0.0052	0.0576	0.0681	0.4607	0.4084	0.5241	0.4308	45	73	71	0.1376

HEALTH MANPOWER ASSESSMENT. RUN 1 - ALL STATES, ALL GROUPS TREND ANALYSIS

TREND NO.	MOVEMENT FREQUENCIES DS	DMA	NONE	IMA	IS	STATE PROBABILITIES DS	DMA	NONE	IMA	IS	MOVEMENT AVE.	S.D.	DES.MOVE.FREQ. DECR	NONE	INCR	DES. AVE.
27	5	18	18	80	70	0.0262	0.0942	0.0942	0.4188	0.3665	0.4377	0.4973	110	65	15	-0.5000
28	1	5	24	106	55	0.0052	0.0262	0.1257	0.5550	0.2880	0.4414	0.3882	7	21	161	0.8148
29	2	0	11	85	96	0.0103	0.0000	0.0567	0.4381	0.4948	0.6160	0.4064	4	21	168	0.8497
30	0	4	7	91	91	0.0000	0.0207	0.0363	0.4715	0.4715	0.6067	0.3843	6	16	170	0.8542
31	1	1	10	99	81	0.0052	0.0052	0.0521	0.5156	0.4219	0.5698	0.3864	3	11	177	0.9110
32	1	4	32	106	48	0.0052	0.0209	0.1675	0.5550	0.2513	0.4063	0.3786	23	30	137	0.6000
33	17	62	32	63	17	0.0890	0.3246	0.1675	0.3298	0.0890	0.0010	0.4867	85	42	62	-0.1217
34	4	5	34	97	54	0.0206	0.0258	0.1753	0.5000	0.2784	0.4000	0.4316	9	21	163	0.7979
35	33	85	40	29	7	0.1701	0.4381	0.2062	0.1495	0.0361	-0.2206	0.4587	17	28	147	0.6771
36	37	104	41	8	4	0.1907	0.5361	0.2113	0.0412	0.0206	-0.3186	0.4023	95	82	15	-0.4167
37	10	27	21	88	46	0.0521	0.1406	0.1094	0.4583	0.2396	0.2828	0.5154	34	15	142	0.5654
38	3	7	10	111	63	0.0155	0.0361	0.0515	0.5722	0.3247	0.4701	0.4171	63	66	63	0.0000
39	0	6	20	128	38	0.0000	0.0313	0.1042	0.6667	0.1979	0.3885	0.3313	6	18	167	0.8429
40	0	8	18	113	55	0.0000	0.0412	0.0928	0.5825	0.2835	0.4459	0.3753	4	10	178	0.9063
41	0	5	14	99	76	0.0000	0.0258	0.0722	0.5103	0.3918	0.5371	0.3892	6	14	171	0.8639
42	1	9	24	104	56	0.0052	0.0464	0.1237	0.5361	0.2887	0.4304	0.4012	2	15	175	0.9010
43	1	11	26	115	40	0.0052	0.0570	0.1347	0.5959	0.2073	0.3637	0.3727	3	17	171	0.8796
44	1	5	41	102	44	0.0052	0.0259	0.2124	0.5285	0.2280	0.3736	0.3788	4	20	167	0.8534
45	0	6	38	110	37	0.0000	0.0314	0.1990	0.5759	0.1937	0.3571	0.3477	5	14	170	0.8730
46	1	6	44	113	28	0.0052	0.0313	0.2292	0.5885	0.1458	0.3078	0.3348	4	24	162	0.8316
47	1	15	33	104	40	0.0052	0.0777	0.1710	0.5389	0.2073	0.3404	0.3899	9	36	146	0.7173
48	2	5	37	107	44	0.0103	0.0256	0.1897	0.5487	0.2256	0.3723	0.3860	6	31	156	0.7772
49	2	19	35	81	54	0.0103	0.0995	0.1832	0.4241	0.2827	0.3696	0.4513	90	61	39	-0.2684
50	2	2	28	117	45	0.0103	0.0103	0.1443	0.6031	0.2320	0.3995	0.3713	2	11	179	0.9219
51	0	12	31	96	56	0.0000	0.0615	0.1590	0.4923	0.2872	0.4164	0.4045	25	87	81	0.2902
52	0	4	29	118	39	0.0000	0.0211	0.1526	0.6211	0.2053	0.3853	0.3386	5	30	153	0.7872

HEALTH MANPOWER ASSESSMENT. RUN 1 - ALL STATES, ALL GROUPS PROJECTION ANALYSIS

PROJECTION NO.	LOW ESTIMATE NO.	MEAN	S.D.	LIKELY ESTIMATE NO.	MEAN	S.D.	HIGH ESTIMATE NO.	MEAN	S.D.
1	153.	6.922	1.854	156.	9.150	2.781	155.	11.807	4.672
2	154.	5.507	1.324	154.	7.011	2.191	152.	8.763	3.310
3	163.	26.748	6.668	166.	36.542	8.859	164.	45.457	11.399
4	163.	6.933	5.172	166.	12.893	9.896	164.	19.250	14.114
5	156.	5.249	1.627	163.	6.467	2.519	154.	8.205	3.923
6	159.	6.299	1.729	163.	7.923	1.780	160.	10.428	2.278
7[1]	158.			161.			158.		
8[2]	144.	552.778	223.745	147.	681.803	289.610	142.	880.845	444.230

1. Respondents had difficulty with the basic unit of measurement (.06%) and hence the results are not useful.

2. Some respondents pointed out that the ratio of "1 per 700" refers to "total number of doctors" not just "general practitioners". Those who based their response on the G.P. ratio (roughly 1 per 1400) and those who expressed their response as the inverse ratio (roughly .0014) were excluded from these analyses. About 14 respondents were involved out of about 160 who answered the question at all.

HEALTH MANPOWER ASSESSMENT, RUN 2 - ALL STATES, GROUP A 196 RESPONDENTS

EVENT NO.	PROBABILITY NO.	AVE.	SD	RANK.	CONFIDENCE NO.	AVE.	SD	RANK	SIGNIFICANCE NO.	AVE.	SD	RANK	DESIRABILITY NO.	AVE.	SD	RANK	IMPACT NO.	AVE.	SD	RANK
1	55.	0.495	0.295	89.0	55.	0.664	0.145	31.5	55.	0.736	0.193	33.5	55.	-0.400	0.499	90.0	55.	0.248	0.203	72.0
2	53.	0.540	0.220	79.0	54.	0.528	0.190	94.0	53.	0.731	0.216	37.0	53.	0.075	0.696	67.0	53.	0.221	0.168	84.0
3	54.	0.597	0.253	70.0	55.	0.691	0.165	20.5	55.	0.636	0.260	84.5	55.	-0.227	0.602	83.0	54.	0.272	0.212	63.0
4	55.	0.543	0.263	77.0	54.	0.708	0.185	13.0	54.	0.657	0.222	77.0	54.	-0.120	0.593	79.0	54.	0.265	0.205	65.0
5	55.	0.677	0.266	37.0	55.	0.700	0.187	16.0	55.	0.773	0.204	9.5	54.	-0.435	0.561	93.0	55.	0.395	0.271	19.0
6	54.	0.674	0.263	58.0	54.	0.657	0.139	37.0	54.	0.755	0.223	15.0	54.	-0.065	0.707	76.0	54.	0.321	0.203	46.0
7	55.	0.656	0.261	46.0	55.	0.745	0.139	2.0	54.	0.833	0.173	2.0	54.	-0.630	0.537	98.0	54.	0.410	0.234	13.0
8	54.	0.678	0.206	29.0	55.	0.677	0.195	25.5	55.	0.686	0.203	63.0	55.	0.509	0.543	23.5	54.	0.370	0.236	29.0
9	55.	0.698	0.204	28.0	55.	0.709	0.170	11.0	55.	0.786	0.175	5.5	55.	0.364	0.599	42.0	55.	0.417	0.225	9.0
10	54.	0.446	0.213	91.0	54.	0.514	0.201	96.0	53.	0.561	0.247	98.0	53.	0.104	0.544	62.0	53.	0.148	0.118	97.0
11	55.	0.561	0.243	73.0	55.	0.577	0.171	71.5	55.	0.727	0.186	38.0	55.	0.518	0.476	22.0	55.	0.256	0.180	86.0
12	55.	0.726	0.227	21.0	55.	0.632	0.212	51.0	55.	0.732	0.223	36.0	55.	0.509	0.481	23.5	55.	0.376	0.242	28.0
13	54.	0.656	0.246	45.0	53.	0.623	0.204	57.0	54.	0.769	0.179	12.5	54.	0.046	0.662	71.5	53.	0.342	0.232	38.0
14	55.	0.745	0.195	8.0	55.	0.709	0.201	11.0	55.	0.741	0.190	27.5	55.	0.400	0.591	37.0	55.	0.444	0.268	6.0
15	55.	0.691	0.196	33.0	55.	0.723	0.183	5.0	55.	0.782	0.185	7.0	55.	0.555	0.464	15.0	55.	0.410	0.204	14.0
16	55.	0.642	0.218	52.0	54.	0.718	0.180	7.5	54.	0.704	0.241	49.0	54.	0.398	0.494	38.0	54.	0.358	0.231	34.0
17	55.	0.696	0.234	30.0	55.	0.655	0.254	40.0	55.	0.718	0.234	41.5	55.	0.600	0.471	12.0	55.	0.395	0.302	20.0
18	55.	0.641	0.233	53.0	55.	0.623	0.157	55.5	55.	0.705	0.203	48.0	55.	0.336	0.548	47.5	55.	0.300	0.181	53.0
19	55.	0.626	0.248	57.0	55.	0.673	0.238	27.5	54.	0.676	0.213	68.0	55.	-0.018	0.504	74.5	54.	0.322	0.266	44.0
20	54.	0.654	0.218	46.0	54.	0.648	0.228	43.0	54.	0.685	0.216	64.0	54.	0.519	0.360	21.0	54.	0.333	0.239	40.0
21	55.	0.675	0.187	36.0	55.	0.627	0.157	53.5	55.	0.641	0.242	81.0	55.	0.291	0.502	51.0	55.	0.296	0.202	55.0
22	53.	0.392	0.293	95.0	53.	0.618	0.236	60.0	52.	0.678	0.216	67.0	53.	0.094	0.615	64.0	52.	0.204	0.260	89.0
23	55.	0.842	0.152	1.0	55.	0.736	0.181	3.0	55.	0.786	0.236	5.5	55.	0.136	0.657	58.5	55.	0.533	0.279	2.0
24	54.	0.705	0.248	26.0	55.	0.673	0.207	27.5	55.	0.695	0.212	52.0	55.	0.455	0.498	28.0	54.	0.381	0.251	27.0
25	53.	0.799	0.201	4.0	53.	0.703	0.212	15.0	53.	0.745	0.264	26.0	53.	0.368	0.576	41.0	53.	0.468	0.302	3.0

HEALTH MANPOWER ASSESSMENT, RUN 2 - ALL STATES, GROUP A 196 RESPONDENTS

EVENT NO.	PROBABILITY NO.	AVE.	SD	RANK	CONFIDENCE NO.	AVE.	SD	RANK	SIGNIFICANCE NO.	AVE.	SD	RANK	DESIRABILITY NO.	AVE.	SD	RANK	IMPACT NO.	AVE.	SD	RANK
26	55.	0.641	0.235	42.5	55.	0.682	0.210	24.0	55.	0.659	0.230	76.0	55.	0.209	0.545	57.0	55.	0.354	0.269	36.0
27	53.	0.620	0.226	60.0	53.	0.637	0.165	48.0	53.	0.788	0.191	4.0	53.	-0.189	0.754	82.0	53.	0.313	0.182	49.0
28	51.	0.609	0.225	62.0	51.	0.593	0.232	68.0	52.	0.692	0.262	57.0	52.	-0.538	0.489	96.0	51.	0.274	0.203	62.0
29	55.	0.608	0.262	63.5	55.	0.650	0.188	42.0	55.	0.741	0.202	27.5	54.	-0.324	0.562	86.0	55.	0.302	0.201	51.0
30	55.	0.613	0.244	61.0	55.	0.550	0.250	83.0	55.	0.636	0.273	84.5	55.	0.373	0.524	40.0	55.	0.246	0.217	74.0
31	53.	0.758	0.188	9.0	53.	0.656	0.253	39.0	53.	0.722	0.198	40.0	53.	0.623	0.362	8.0	53.	0.398	0.242	17.0
32	43.	0.528	0.249	81.0	45.	0.539	0.223	87.0	43.	0.581	0.263	97.0	42.	0.286	0.410	52.0	43.	0.215	0.211	86.0
33	52.	0.705	0.228	25.0	52.	0.630	0.211	52.0	52.	0.736	0.210	35.0	52.	0.423	0.558	36.0	52.	0.367	0.250	31.0
34	54.	0.646	0.220	49.0	54.	0.699	0.176	17.0	54.	0.667	0.255	72.0	54.	0.056	0.575	69.5	54.	0.322	0.232	45.0
35	55.	0.742	0.206	12.0	55.	0.645	0.227	44.5	55.	0.755	0.236	16.0	55.	0.691	0.350	3.0	55.	0.403	0.257	15.0
36	55.	0.641	0.246	42.5	55.	0.623	0.228	55.5	55.	0.691	0.301	58.5	55.	0.536	0.466	18.0	55.	0.332	0.271	42.0
37	55.	0.644	0.225	40.0	55.	0.627	0.242	53.5	55.	0.600	0.272	95.0	55.	-0.073	0.591	77.0	55.	0.272	0.224	64.0
38	55.	0.595	0.245	86.0	55.	0.618	0.196	58.5	55.	0.673	0.233	69.5	55.	0.336	0.523	47.5	55.	0.221	0.199	85.0
39	49.	0.620	0.207	59.0	51.	0.529	0.274	93.0	49.	0.602	0.188	94.0	49.	0.378	0.372	39.0	49.	0.252	0.202	69.0
40	51.	0.507	0.250	88.0	52.	0.538	0.283	88.0	51.	0.613	0.229	91.0	50.	-0.180	0.498	81.0	51.	0.194	0.212	91.0
41	54.	0.640	0.229	44.0	54.	0.597	0.176	66.5	54.	0.662	0.251	74.5	54.	0.102	0.588	63.0	54.	0.307	0.216	50.0
42	54.	0.797	0.168	5.0	54.	0.662	0.236	33.5	54.	0.745	0.233	23.0	54.	0.657	0.269	7.0	54.	0.448	0.280	5.0
43	54.	0.445	0.293	92.0	54.	0.653	0.189	41.0	54.	0.750	0.231	18.5	54.	-0.287	0.704	84.0	54.	0.226	0.199	82.0
44	55.	0.783	0.183	11.0	55.	0.668	0.191	30.0	54.	0.759	0.231	14.0	55.	0.536	0.425	18.0	54.	0.396	0.228	18.0
45	54.	0.710	0.198	22.0	54.	0.583	0.231	70.0	53.	0.774	0.244	8.0	54.	-0.648	0.468	99.0	53.	0.359	0.253	33.0
46	53.	0.696	0.184	50.0	53.	0.533	0.212	90.0	53.	0.632	0.255	87.0	53.	0.443	0.452	31.0	53.	0.250	0.176	71.0
47	54.	0.593	0.227	78.0	54.	0.556	0.229	81.0	54.	0.648	0.223	80.0	54.	0.343	0.417	46.0	54.	0.240	0.206	77.0
48	55.	0.679	0.223	36.0	55.	0.691	0.196	20.5	54.	0.741	0.215	30.5	55.	0.445	0.537	30.0	54.	0.383	0.228	25.0
49	54.	0.629	0.267	56.0	54.	0.565	0.237	77.0	54.	0.741	0.225	30.5	54.	0.306	0.604	49.0	54.	0.290	0.223	57.0
50	54.	0.643	0.234	41.0	54.	0.713	0.183	9.0	54.	0.741	0.210	30.5	54.	0.352	0.550	45.0	54.	0.387	0.259	23.0

HEALTH MANPOWER ASSESSMENT, RUN 2 - ALL STATES, GROUP A 196 RESPONDENTS

EVENT NO.	PROBABILITY NO.	AVE.	SD	RANK	CONFIDENCE NO.	AVE.	SD	RANK	SIGNIFICANCE NO.	AVE.	SD	RANK	DESIRABILITY NO.	AVE.	SD	RANK	IMPACT NO.	AVE.	SD	RANK
51	53.	0.553	0.225	75.0	54.	0.532	0.187	91.5	53.	0.585	0.243	96.0	53.	0.132	0.457	61.0	53.	0.196	0.153	90.0
52	53.	0.617	0.211	55.0	53.	0.547	0.233	84.0	53.	0.693	0.210	56.0	53.	0.013	0.331	11.0	53.	0.281	0.231	59.0
53	54.	0.599	0.252	66.0	54.	0.560	0.209	80.0	54.	0.630	0.224	88.0	54.	0.222	0.478	56.0	54.	0.221	0.162	83.0
54	55.	0.733	0.201	17.0	55.	0.677	0.206	25.5	55.	0.673	0.242	69.5	55.	0.527	0.362	20.0	55.	0.361	0.258	26.0
55	54.	0.550	0.223	76.0	54.	0.532	0.215	91.5	54.	0.616	0.224	89.0	52.	0.260	0.475	54.0	54.	0.212	0.181	88.0
56	53.	0.607	0.281	65.0	54.	0.634	0.234	49.5	54.	0.690	0.220	60.5	53.	0.057	0.482	68.0	53.	0.290	0.256	58.0
57	55.	0.729	0.213	20.0	55.	0.568	0.231	76.0	55.	0.668	0.248	71.0	55.	0.427	0.471	32.5	55.	0.301	0.222	52.0
58	55.	0.774	0.166	6.0	55.	0.709	0.207	11.0	55.	0.718	0.208	41.5	55.	0.573	0.308	13.0	55.	0.429	0.267	8.0
59	54.	0.836	0.161	2.0	55.	0.782	0.166	1.0	55.	0.859	0.183	1.0	55.	0.873	0.218	1.0	54.	0.584	0.258	1.0
60	54.	0.711	0.175	15.0	54.	0.644	0.234	46.0	54.	0.694	0.234	54.0	54.	0.620	0.318	9.5	54.	0.370	0.265	30.0
61	55.	0.409	0.219	94.0	55.	0.491	0.248	98.0	55.	0.609	0.260	92.0	55.	0.091	0.626	65.0	55.	0.136	0.167	98.0
62	53.	0.523	0.270	83.0	53.	0.599	0.235	65.0	53.	0.689	0.200	62.0	53.	-0.160	0.483	80.0	53.	0.231	0.203	80.0
63	54.	0.649	0.233	39.0	54.	0.662	0.193	33.5	54.	0.745	0.201	23.0	54.	0.472	0.466	26.0	54.	0.362	0.243	32.0
64	53.	0.506	0.251	87.0	53.	0.670	0.187	29.0	52.	0.639	0.266	82.5	53.	-0.321	0.559	85.0	52.	0.237	0.207	78.0
65	55.	0.371	0.248	97.0	55.	0.545	0.224	85.0	55.	0.682	0.245	65.5	55.	-0.018	0.625	74.5	55.	0.151	0.172	95.0
66	51.	0.655	0.212	47.0	52.	0.510	0.290	97.0	51.	0.608	0.268	93.0	52.	0.135	0.538	60.0	51.	0.243	0.233	75.0
67	51.	0.376	0.190	99.0	52.	0.433	0.260	99.0	51.	0.559	0.283	99.0	52.	-0.423	0.513	91.5	51.	0.085	0.098	99.0
68	51.	0.512	0.227	85.0	52.	0.543	0.212	86.0	52.	0.639	0.227	82.5	53.	0.085	0.605	66.0	51.	0.187	0.137	92.0
69	54.	0.512	0.255	84.0	54.	0.602	0.228	63.0	54.	0.745	0.189	23.0	54.	0.361	0.573	43.5	54.	0.253	0.201	68.0
70	54.	0.527	0.244	82.0	54.	0.685	0.199	23.0	54.	0.694	0.234	54.0	54.	-0.380	0.544	87.0	54.	0.276	0.254	61.0
71	54.	0.693	0.193	32.0	54.	0.597	0.212	66.5	54.	0.708	0.234	47.0	54.	0.620	0.384	9.5	54.	0.332	0.243	41.0
72	54.	0.582	0.214	71.0	54.	0.569	0.189	75.0	54.	0.662	0.236	74.5	54.	0.296	0.540	50.0	54.	0.247	0.192	73.0
73	52.	0.707	0.217	23.0	53.	0.590	0.271	69.0	51.	0.716	0.192	45.0	51.	0.265	0.518	53.0	51.	0.325	0.229	43.0
74	54.	0.595	0.249	69.0	55.	0.555	0.222	82.0	54.	0.750	0.192	18.5	54.	0.426	0.539	34.5	54.	0.280	0.230	60.0
75	55.	0.321	0.238	98.0	55.	0.695	0.195	19.0	53.	0.726	0.224	39.0	52.	-0.423	0.575	91.5	53.	0.148	0.127	96.0

HEALTH MANPOWER ASSESSMENT, RUN 2 - ALL STATES, GROUP A 196 RESPONDENTS

EVENT NO.	PROBABILITY NO.	AVE.	SD	RANK	CONFIDENCE NO.	AVE.	SD	RANK	SIGNIFICANCE NO.	AVE.	SD	RANK	DESIRABILITY NO.	AVE.	SD	RANK	IMPACT NO.	AVE.	SD	RANK
76	54.	0.531	0.233	80.0	54.	0.574	0.248	73.5	54.	0.745	0.201	23.0	54.	0.676	0.399	5.0	54.	0.251	0.200	70.0
77	55.	0.730	0.266	19.0	55.	0.705	0.203	14.0	55.	0.750	0.202	18.5	55.	0.427	0.499	32.5	55.	0.415	0.268	10.0
78	54.	0.691	0.227	34.0	54.	0.657	0.217	37.0	53.	0.750	0.206	18.5	54.	-0.556	0.416	97.0	53.	0.355	0.230	35.0
79	54.	0.706	0.247	24.0	54.	0.718	0.210	7.5	54.	0.741	0.220	30.5	54.	0.056	0.643	69.5	54.	0.401	0.264	16.0
80	55.	0.732	0.179	18.0	55.	0.645	0.206	44.5	55.	0.614	0.265	90.0	55.	0.536	0.380	18.0	55.	0.315	0.218	48.0
81	55.	0.476	0.262	90.0	55.	0.605	0.189	62.0	55.	0.682	0.259	65.5	55.	-0.391	0.493	88.0	55.	0.214	0.184	87.0
82	55.	0.470	0.223	93.0	55.	0.618	0.212	58.5	55.	0.691	0.208	58.5	55.	-0.482	0.522	94.0	55.	0.170	0.134	93.0
83	54.	0.741	0.213	14.0	54.	0.657	0.211	37.0	54.	0.718	0.255	43.5	54.	0.685	0.376	4.0	54.	0.393	0.257	21.0
84	55.	0.643	0.241	51.0	55.	0.600	0.200	64.0	55.	0.709	0.201	46.0	55.	-0.091	0.540	78.0	55.	0.295	0.223	56.0
85	53.	0.691	0.217	35.0	53.	0.698	0.177	18.0	53.	0.811	0.194	3.0	53.	0.792	0.265	2.0	53.	0.411	0.231	12.0
86	54.	0.748	0.194	7.0	54.	0.690	0.215	22.0	54.	0.745	0.238	23.0	54.	0.667	0.385	6.0	54.	0.433	0.282	7.0
87	55.	0.608	0.241	63.5	55.	0.564	0.230	78.0	55.	0.736	0.210	33.5	55.	0.255	0.587	55.0	55.	0.300	0.248	54.0
88	52.	0.393	0.210	96.0	52.	0.563	0.201	79.0	52.	0.635	0.252	86.0	51.	0.000	0.542	73.0	52.	0.156	0.106	94.0
89	54.	0.738	0.190	16.0	54.	0.727	0.175	4.0	54.	0.699	0.212	50.5	54.	0.361	0.445	43.5	54.	0.413	0.265	11.0
90	54.	0.807	0.175	3.0	54.	0.722	0.196	6.0	54.	0.718	0.268	43.5	54.	0.426	0.522	34.5	54.	0.465	0.303	4.0
91	53.	0.509	0.178	87.0	53.	0.524	0.249	95.0	52.	0.654	0.226	78.5	52.	0.452	0.407	29.0	52.	0.229	0.183	81.0
92	55.	0.694	0.190	31.0	55.	0.664	0.198	31.5	54.	0.690	0.215	60.5	54.	0.565	0.334	14.0	54.	0.341	0.229	39.0
93	54.	0.597	0.235	68.0	54.	0.537	0.233	89.0	54.	0.699	0.212	50.5	54.	-0.398	0.377	89.0	54.	0.241	0.187	76.0
94	54.	0.751	0.198	10.0	54.	0.616	0.214	61.0	54.	0.769	0.203	12.5	54.	-0.537	0.543	95.0	54.	0.387	0.256	24.0
95	53.	0.574	0.233	72.0	54.	0.574	0.257	73.5	53.	0.769	0.205	11.0	53.	0.481	0.532	25.0	53.	0.255	0.184	67.0
96	55.	0.741	0.200	13.0	55.	0.659	0.181	35.0	55.	0.773	0.235	9.5	55.	0.545	0.533	16.0	55.	0.392	0.232	22.0
97	54.	0.637	0.231	54.0	54.	0.634	0.191	49.5	54.	0.694	0.234	54.0	54.	0.046	0.555	71.5	54.	0.317	0.229	47.0
98	55.	0.558	0.242	74.0	55.	0.577	0.196	71.5	55.	0.664	0.230	73.0	55.	0.136	0.560	58.5	55.	0.233	0.173	79.0
99	52.	0.704	0.218	27.0	52.	0.639	0.237	47.0	52.	0.654	0.241	78.5	52.	0.462	0.426	27.0	52.	0.350	0.237	37.0

HEALTH MANPOWER ASSESSMENT. RUN 2 - ALL STATES, GROUP A TREND ANALYSIS

TREND NO.	MOVEMENT FREQUENCIES					STATE PROBABILITIES					MOVEMENT		DES.MOVE.FREQ.			DES.
	US	DMA	NONE	IMA	IS	US	DMA	NONE	IMA	IS	AVE.	S.D.	DECR	NONE	INCR	AVE.
1	0	1	3	10	41	0.0000	0.0182	0.0545	0.1818	0.7455	0.7945	0.3635	7	12	36	0.5273
2	7	9	6	18	14	0.1296	0.1667	0.1111	0.3333	0.2593	0.1796	0.6337	18	16	20	0.0370
3	4	6	11	31	3	0.0727	0.1091	0.2000	0.5636	0.0545	0.1182	0.4170	12	15	28	0.2909
4	1	3	9	17	18	0.0208	0.0625	0.1875	0.3542	0.3750	0.4417	0.4881	9	18	21	0.2500
5	1	4	6	23	20	0.0185	0.0741	0.1111	0.4259	0.3704	0.4574	0.4740	10	15	29	0.3519
6	4	7	14	22	4	0.0784	0.1373	0.2745	0.4314	0.0784	0.0882	0.4475	1	6	44	0.8431
7	4	21	11	12	5	0.0755	0.3962	0.2075	0.2264	0.0943	-0.0321	0.4742	21	18	14	-0.1321
8	2	4	2	25	22	0.0364	0.0727	0.0364	0.4545	0.4000	0.4782	0.5051	6	17	32	0.4727
9	0	0	2	24	29	0.0000	0.0000	0.0364	0.4364	0.5273	0.6582	0.3652	8	12	35	0.4909
10	0	1	4	19	30	0.0000	0.0185	0.0741	0.3519	0.5556	0.6556	0.3989	7	17	30	0.4259
11	0	0	4	22	28	0.0000	0.0000	0.0741	0.4074	0.5185	0.6407	0.3803	36	11	7	-0.5370
12	0	0	5	28	18	0.0000	0.0000	0.0980	0.5490	0.3529	0.5176	0.3666	20	25	7	-0.2500
13	0	2	5	16	31	0.0000	0.0370	0.0926	0.2963	0.5741	0.6519	0.4233	3	11	40	0.6852
14	10	20	6	14	4	0.1852	0.3704	0.1111	0.2593	0.0741	-0.1444	0.5432	44	7	3	-0.7593
15	0	0	0	24	30	0.0000	0.0000	0.0000	0.4444	0.5556	0.6889	0.3478	46	3	5	-0.7593
16	0	1	1	23	29	0.0000	0.0185	0.0185	0.4259	0.5370	0.6593	0.3774	3	7	44	0.7593
17	2	9	13	20	10	0.0370	0.1667	0.2407	0.3704	0.1852	0.2093	0.4762	1	2	51	0.9259
18	1	2	16	26	9	0.0185	0.0370	0.2963	0.4815	0.1667	0.2815	0.3907	2	14	38	0.6667
19	0	17	8	18	12	0.0000	0.3091	0.1455	0.3273	0.2182	0.2236	0.4748	47	4	4	-0.7818
20	0	8	7	17	23	0.0000	0.1455	0.1273	0.3091	0.4182	0.4673	0.4907	52	0	3	-0.8909
21	0	7	11	15	21	0.0000	0.1296	0.2037	0.2778	0.3889	0.4333	0.4876	52	1	2	-0.9091
22	1	1	3	20	29	0.0185	0.0185	0.0556	0.3704	0.5370	0.6241	0.4484	52	0	2	-0.9259
23	1	3	9	27	11	0.0196	0.0588	0.1765	0.5294	0.2157	0.3373	0.4177	13	25	14	0.0192
24	15	30	8	2	0	0.2727	0.5455	0.1455	0.0364	0.0000	-0.4255	0.3796	44	9	2	-0.7636
25	10	15	8	13	8	0.1852	0.2778	0.1481	0.2407	0.1481	-0.0481	0.6146	25	15	13	-0.2264
26	0	2	4	24	25	0.0000	0.0364	0.0727	0.4364	0.4545	0.5745	0.4086	16	19	20	0.0727

HEALTH MANPOWER ASSESSMENT. RUN 2 - ALL STATES, GROUP A TREND ANALYSIS

TREND NO.	MOVEMENT FREQUENCIES DS	DMA	NONE	IMA	IS	STATE PROBABILITIES DS	DMA	NONE	IMA	IS	MOVEMENT AVE.	S.D.	DES.MOVE.FREQ. DECR	NONE	INCR	DES. AVE.
27	2	4	6	23	19	0.0370	0.0741	0.1111	0.4259	0.3519	0.4204	0.5071	29	20	5	-0.4444
28	0	3	7	29	16	0.0000	0.0545	0.1273	0.5273	0.2909	0.4327	0.3950	0	8	47	0.8545
29	0	0	2	25	28	0.0000	0.0000	0.0364	0.4545	0.5091	0.6455	0.3652	2	6	47	0.8182
30	0	0	2	25	28	0.0000	0.0000	0.0364	0.4545	0.5091	0.6455	0.3652	1	7	47	0.8364
31	0	1	2	26	26	0.0000	0.0182	0.0364	0.4727	0.4727	0.6091	0.3820	0	4	51	0.9273
32	0	0	9	34	11	0.0000	0.0000	0.1667	0.6296	0.2037	0.3926	0.3259	4	10	40	0.6667
33	4	15	6	23	6	0.0741	0.2778	0.1111	0.4259	0.1111	0.0815	0.4918	21	13	20	-0.0185
34	1	0	8	27	19	0.0182	0.0000	0.1455	0.4909	0.3455	0.4745	0.4273	2	6	47	0.8182
35	9	19	16	8	3	0.1636	0.3455	0.2909	0.1455	0.0545	-0.1691	0.4835	3	12	40	0.6727
36	8	32	13	2	0	0.1455	0.5818	0.2364	0.0364	0.0000	-0.3091	0.3249	28	24	3	-0.4545
37	3	8	4	24	16	0.0545	0.1455	0.0727	0.4364	0.2909	0.3236	0.5414	11	5	39	0.5091
38	3	1	2	30	19	0.0545	0.0182	0.0364	0.5455	0.3455	0.4491	0.4990	16	19	20	0.0727
39	0	2	8	35	10	0.0000	0.0364	0.1455	0.6364	0.1818	0.3618	0.3338	1	8	46	0.8182
40	0	2	5	29	19	0.0000	0.0364	0.0909	0.5273	0.3455	0.4927	0.3917	2	3	50	0.8727
41	0	1	6	25	23	0.0000	0.0182	0.1091	0.4545	0.4182	0.5491	0.3990	2	4	48	0.8519
42	0	3	8	31	13	0.0000	0.0545	0.1455	0.5636	0.2364	0.3891	0.3750	0	4	51	0.9273
43	1	1	6	33	13	0.0185	0.0185	0.1111	0.6111	0.2407	0.4000	0.3949	1	2	51	0.9259
44	1	2	10	26	16	0.0182	0.0364	0.1818	0.4727	0.2909	0.4036	0.4382	1	4	50	0.8909
45	0	1	12	27	15	0.0000	0.0182	0.2182	0.4909	0.2727	0.4145	0.3830	2	4	49	0.8545
46	0	2	12	29	11	0.0000	0.0370	0.2222	0.5370	0.2037	0.3537	0.3609	0	5	49	0.9074
47	1	4	7	29	14	0.0182	0.0727	0.1273	0.5273	0.2545	0.3727	0.4334	1	11	43	0.7636
48	2	0	11	27	15	0.0364	0.0000	0.2000	0.4909	0.2727	0.3836	0.4540	3	11	41	0.6909
49	0	0	5	30	18	0.0000	0.0000	0.0943	0.5660	0.3396	0.5094	0.3620	16	23	14	-0.0377
50	0	1	5	29	20	0.0000	0.0182	0.0909	0.5273	0.3636	0.5164	0.3822	0	4	51	0.9273
51	0	2	9	26	18	0.0000	0.0364	0.1636	0.4727	0.3273	0.4582	0.4039	8	22	25	0.3091
52	0	2	9	32	10	0.0000	0.0377	0.1698	0.6038	0.1887	0.3585	0.3434	1	10	42	0.7736

HEALTH MANPOWER ASSESSMENT. RUN 2 - ALL STATES, GROUP A PROJECTION ANALYSIS

PROJECTION NO.	LOW ESTIMATE NO.	LOW ESTIMATE MEAN	LOW ESTIMATE S.D.	LIKELY ESTIMATE NO.	LIKELY ESTIMATE MEAN	LIKELY ESTIMATE S.D.	HIGH ESTIMATE NO.	HIGH ESTIMATE MEAN	HIGH ESTIMATE S.D.
1	40.	7.388	2.751	41.	9.671	3.340	40.	13.463	6.252
2	39.	5.731	1.353	39.	7.173	2.389	38.	9.316	4.449
3	42.	27.000	6.615	44.	35.750	9.927	42.	45.690	12.684
4	41.	8.183	5.797	44.	14.313	10.797	41.	21.902	13.961
5	39.	5.564	1.578	44.	6.881	2.629	38.	8.687	3.668
6	40.	5.825	1.829	43.	7.605	2.180	40.	10.238	2.340
7[1]	41.			43.			41.		
8[2]	36.	572.222	206.641	39.	719.231	300.345	36.	959.167	604.632

1. Respondents had difficulty with the basic unit of measurement (.06%) and hence the results are not useful.

2. Some respondents pointed out that the ratio of "1 per 700" refers to "total number of doctors" not just "general practitioners". Those who based their response on the G.P. ratio (roughly 1 per 1400) and those who expressed their response as the inverse ratio (roughly .0014) were excluded from these analyses. About 14 respondents were involved out of about 160 who answered the question at all.

HEALTH MANPOWER ASSESSMENT. RUN 3 - ALL STATES, GROUP B 196 RESPONDENTS

EVENT NO.	PROBABILITY NO.	AVE.	SD	RANK	CONFIDENCE NO.	AVE.	SD	RANK	SIGNIFICANCE NO.	AVE.	SD	RANK	DESIRABILITY NO.	AVE.	SD	RANK	IMPACT NO.	AVE.	SD	RANK
1	39.	0.533	0.297	76.0	39.	0.609	0.168	53.0	39.	0.731	0.199	25.0	39.	-0.487	0.487	87.0	39.	0.252	0.209	63.0
2	38.	0.638	0.235	38.5	38.	0.539	0.195	85.5	38.	0.711	0.233	38.5	36.	0.153	0.599	58.0	38.	0.254	0.198	62.0
3	38.	0.651	0.250	31.0	38.	0.605	0.212	56.5	38.	0.618	0.205	84.0	37.	-0.338	0.593	82.0	38.	0.262	0.188	59.0
4	38.	0.595	0.232	60.0	38.	0.664	0.209	18.5	38.	0.684	0.241	48.0	38.	-0.224	0.558	76.0	38.	0.282	0.229	48.0
5	38.	0.566	0.301	69.0	38.	0.645	0.169	28.0	38.	0.770	0.176	13.5	38.	-0.697	0.390	98.0	38.	0.283	0.205	46.0
6	38.	0.579	0.268	67.0	38.	0.592	0.156	61.0	38.	0.757	0.146	18.0	38.	-0.263	0.582	78.5	38.	0.273	0.181	56.0
7	38.	0.632	0.258	49.0	38.	0.671	0.163	13.0	38.	0.789	0.186	7.0	38.	-0.513	0.493	88.0	38.	0.335	0.213	22.0
8	37.	0.722	0.180	10.0	37.	0.628	0.171	40.0	37.	0.628	0.222	79.0	37.	0.554	0.416	11.0	37.	0.308	0.182	37.0
9	38.	0.678	0.209	21.5	38.	0.638	0.169	33.0	38.	0.717	0.183	34.5	38.	0.408	0.395	34.0	38.	0.334	0.210	25.0
10	38.	0.417	0.259	92.0	38.	0.454	0.221	98.5	38.	0.500	0.269	98.0	38.	0.184	0.492	56.0	38.	0.121	0.151	95.0
11	37.	0.542	0.269	71.0	37.	0.547	0.191	82.0	37.	0.676	0.216	53.0	36.	0.542	0.361	12.0	37.	0.230	0.190	72.0
12	37.	0.670	0.291	26.0	37.	0.655	0.212	24.0	37.	0.723	0.208	31.5	37.	0.459	0.512	27.5	37.	0.350	0.265	20.0
13	37.	0.616	0.311	34.0	37.	0.669	0.184	15.5	37.	0.831	0.175	3.0	37.	0.081	0.673	64.0	37.	0.365	0.240	13.0
14	38.	0.675	0.203	23.0	38.	0.645	0.136	28.0	38.	0.730	0.133	26.5	38.	0.382	0.451	38.5	38.	0.325	0.154	30.0
15	38.	0.597	0.271	58.5	38.	0.671	0.200	13.0	38.	0.724	0.242	30.0	38.	0.474	0.512	22.5	38.	0.316	0.247	33.0
16	36.	0.565	0.297	70.0	36.	0.681	0.201	10.0	36.	0.688	0.246	47.0	36.	0.458	0.477	29.0	36.	0.314	0.263	34.0
17	38.	0.637	0.231	40.0	38.	0.586	0.252	65.0	38.	0.651	0.233	68.5	38.	0.487	0.466	19.5	38.	0.273	0.236	57.0
18	39.	0.596	0.277	64.0	39.	0.622	0.159	46.5	39.	0.705	0.226	41.0	39.	0.462	0.472	24.0	39.	0.282	0.242	47.0
19	38.	0.638	0.299	38.5	38.	0.625	0.213	43.5	38.	0.625	0.197	81.0	38.	-0.039	0.543	70.5	38.	0.277	0.219	53.0
20	37.	0.630	0.290	45.0	37.	0.622	0.230	49.0	37.	0.655	0.281	66.5	37.	0.392	0.547	37.0	37.	0.292	0.256	44.0
21	38.	0.614	0.241	41.0	38.	0.579	0.191	69.0	38.	0.605	0.196	87.0	38.	0.408	0.360	34.0	38.	0.245	0.181	68.0
22	37.	0.319	0.211	95.0	37.	0.561	0.228	76.5	37.	0.669	0.175	59.0	37.	-0.027	0.581	68.0	37.	0.115	0.096	97.0
23	38.	0.824	0.215	1.0	38.	0.730	0.202	5.0	38.	0.836	0.184	2.0	37.	0.216	0.610	53.0	38.	0.542	0.303	1.0
24	38.	0.603	0.241	55.0	38.	0.605	0.212	56.5	38.	0.572	0.262	93.0	38.	0.197	0.507	55.0	38.	0.247	0.207	66.0
25	38.	0.703	0.235	12.0	38.	0.651	0.203	25.0	38.	0.671	0.237	57.0	38.	0.382	0.506	38.5	38.	0.331	0.265	26.0

HEALTH MANPOWER ASSESSMENT, RUN 3 = ALL STATES, GROUP B 196 RESPONDENTS

EVENT NO.	PROBABILITY NO.	AVE.	SD	RANK	CONFIDENCE NO.	AVE.	SD	RANK	SIGNIFICANCE NO.	AVE.	SD	RANK	DESIRABILITY NO.	AVE.	SD	RANK	IMPACT NO.	AVE.	SD	RANK
26	38.	0.693	0.258	15.0	38.	0.704	0.161	7.0	38.	0.671	0.191	57.0	38.	-0.066	0.598	72.0	38.	0.362	0.245	14.0
27	36.	0.648	0.223	27.0	36.	0.660	0.205	22.0	36.	0.792	0.208	6.0	36.	-0.514	0.595	89.0	36.	0.390	0.261	7.0
28	38.	0.586	0.212	73.0	38.	0.533	0.238	87.5	38.	0.671	0.223	57.0	38.	-0.645	0.443	96.5	38.	0.224	0.179	74.0
29	38.	0.609	0.265	51.0	38.	0.572	0.198	72.0	38.	0.691	0.210	46.0	38.	-0.474	0.380	86.0	38.	0.273	0.235	55.0
30	38.	0.592	0.274	66.0	38.	0.572	0.262	72.0	38.	0.638	0.227	74.0	38.	0.289	0.592	45.5	38.	0.265	0.255	58.0
31	35.	0.690	0.217	17.0	35.	0.586	0.239	63.0	35.	0.693	0.247	45.0	35.	0.514	0.439	15.0	35.	0.335	0.247	23.0
32	38.	0.671	0.260	56.0	38.	0.684	0.196	9.0	38.	0.763	0.243	16.0	38.	0.605	0.540	7.0	38.	0.372	0.299	12.0
33	37.	0.676	0.209	46.0	37.	0.642	0.189	30.5	37.	0.676	0.192	53.0	37.	0.405	0.505	36.0	37.	0.294	0.201	43.0
34	39.	0.695	0.173	14.0	39.	0.660	0.200	20.5	39.	0.564	0.258	94.0	39.	0.141	0.493	60.0	39.	0.290	0.218	45.0
35	39.	0.645	0.170	29.0	39.	0.622	0.203	46.5	39.	0.724	0.232	28.5	39.	0.603	0.379	8.0	39.	0.335	0.229	24.0
36	39.	0.550	0.250	72.0	39.	0.635	0.159	36.0	39.	0.603	0.185	88.0	39.	0.231	0.619	50.0	39.	0.218	0.149	76.0
37	39.	0.631	0.263	44.0	39.	0.660	0.200	20.5	39.	0.590	0.243	91.0	39.	-0.282	0.618	80.0	39.	0.246	0.206	67.0
38	39.	0.310	0.224	97.0	39.	0.712	0.216	6.0	39.	0.596	0.281	89.0	39.	-0.038	0.711	69.0	39.	0.139	0.147	94.0
39	37.	0.596	0.218	63.0	37.	0.500	0.232	92.5	37.	0.480	0.187	99.0	37.	0.297	0.358	43.5	37.	0.176	0.148	88.0
40	37.	0.432	0.253	91.0	37.	0.473	0.231	96.0	36.	0.590	0.244	90.0	36.	-0.167	0.486	75.0	36.	0.117	0.115	96.0
41	39.	0.609	0.241	52.0	39.	0.577	0.180	70.0	39.	0.673	0.180	55.0	39.	0.090	0.553	63.0	39.	0.258	0.187	60.0
42	37.	0.743	0.162	6.0	37.	0.669	0.193	15.5	37.	0.723	0.172	31.5	37.	0.527	0.385	13.0	37.	0.383	0.211	10.0
43	39.	0.455	0.277	87.5	39.	0.615	0.186	51.0	39.	0.712	0.216	37.0	39.	-0.397	0.652	83.0	39.	0.203	0.186	82.0
44	39.	0.740	0.209	7.0	39.	0.635	0.218	36.0	39.	0.756	0.200	19.5	39.	0.641	0.339	4.0	39.	0.387	0.263	9.0
45	38.	0.718	0.183	9.0	38.	0.605	0.241	56.5	38.	0.822	0.189	4.0	37.	-0.635	0.488	94.0	38.	0.390	0.255	6.0
46	38.	0.525	0.244	78.0	38.	0.454	0.256	98.5	38.	0.618	0.228	84.0	38.	0.289	0.546	45.5	38.	0.180	0.175	86.0
47	38.	0.578	0.242	77.0	38.	0.566	0.227	74.0	38.	0.658	0.210	65.0	38.	0.461	0.387	25.5	38.	0.231	0.222	71.0
48	39.	0.674	0.225	24.0	39.	0.635	0.225	36.0	39.	0.705	0.226	41.0	39.	0.474	0.423	21.0	39.	0.355	0.267	16.0
49	37.	0.650	0.242	32.0	38.	0.586	0.238	65.0	36.	0.743	0.181	23.0	36.	0.431	0.502	31.0	36.	0.301	0.210	41.0
50	39.	0.544	0.269	74.0	39.	0.635	0.211	36.0	39.	0.718	0.213	33.0	39.	0.218	0.504	52.0	39.	0.282	0.211	49.0

HEALTH MANPOWER ASSESSMENT. RUN 3 - ALL STATES, GROUP B 196 RESPONDENTS

EVENT NO.	PROBABILITY NO.	AVE.	SD	RANK	CONFIDENCE NO.	AVE.	SD	RANK	SIGNIFICANCE NO.	AVE.	SD	RANK	DESIRABILITY NO.	AVE.	SD	RANK	IMPACT NO.	AVE.	SD	RANK
51	39.	0.536	0.244	75.0	39.	0.519	0.229	91.0	39.	0.526	0.218	96.0	39.	0.051	0.541	66.0	39.	0.176	0.167	87.0
52	38.	0.599	0.218	61.0	39.	0.526	0.218	89.0	38.	0.638	0.179	74.0	38.	0.487	0.334	19.5	38.	0.228	0.164	73.0
53	37.	0.676	0.241	47.0	38.	0.625	0.197	43.5	37.	0.662	0.195	62.0	37.	0.257	0.488	47.0	37.	0.279	0.199	51.0
54	37.	0.679	0.145	13.0	38.	0.553	0.264	79.5	37.	0.682	0.215	49.0	37.	0.459	0.336	27.5	37.	0.317	0.211	32.0
55	37.	0.498	0.223	81.0	38.	0.474	0.235	95.0	37.	0.588	0.211	92.0	37.	0.203	0.563	54.0	37.	0.173	0.179	89.0
56	38.	0.493	0.258	83.0	38.	0.586	0.193	65.0	38.	0.664	0.265	61.0	38.	-0.013	0.493	67.0	38.	0.185	0.165	85.0
57	38.	0.678	0.247	21.5	39.	0.628	0.246	41.5	38.	0.618	0.273	84.0	38.	0.434	0.489	30.0	38.	0.313	0.267	36.0
58	39.	0.736	0.203	8.0	39.	0.667	0.222	17.0	39.	0.705	0.218	41.0	39.	0.526	0.375	14.0	39.	0.389	0.283	8.0
59	39.	0.754	0.216	4.0	39.	0.776	0.168	2.0	39.	0.840	0.174	1.0	39.	0.821	0.265	1.0	39.	0.526	0.269	3.0
60	38.	0.598	0.250	62.0	38.	0.572	0.189	72.0	38.	0.625	0.213	81.0	38.	0.474	0.380	22.5	38.	0.250	0.228	65.0
61	38.	0.382	0.288	94.0	39.	0.545	0.226	84.0	38.	0.651	0.254	68.5	38.	0.250	0.615	48.0	38.	0.141	0.151	93.0
62	38.	0.509	0.252	79.0	39.	0.590	0.208	62.0	38.	0.678	0.214	50.5	38.	-0.092	0.498	73.0	38.	0.221	0.196	75.0
63	39.	0.633	0.233	42.0	39.	0.673	0.129	11.0	39.	0.763	0.160	17.0	39.	0.333	0.570	41.5	39.	0.343	0.203	21.0
64	39.	0.495	0.251	87.5	39.	0.622	0.187	46.5	39.	0.545	0.211	95.0	39.	-0.449	0.597	85.0	39.	0.151	0.119	91.0
65	39.	0.313	0.233	96.0	39.	0.583	0.199	67.0	39.	0.615	0.232	86.0	39.	-0.256	0.619	77.0	39.	0.114	0.107	98.0
66	35.	0.613	0.234	50.0	36.	0.500	0.220	92.5	35.	0.629	0.249	78.0	35.	0.143	0.568	59.0	35.	0.210	0.179	77.0
67	35.	0.263	0.164	99.0	36.	0.458	0.217	97.0	35.	0.636	0.263	76.0	35.	-0.557	0.410	91.0	35.	0.078	0.072	99.0
68	35.	0.411	0.250	93.0	36.	0.479	0.216	94.0	35.	0.643	0.248	72.0	35.	-0.114	0.708	74.0	35.	0.149	0.140	92.0
69	39.	0.493	0.258	82.0	39.	0.647	0.176	26.0	39.	0.756	0.215	19.5	39.	0.128	0.607	62.0	39.	0.256	0.221	61.0
70	39.	0.491	0.250	84.0	39.	0.603	0.210	60.0	39.	0.660	0.268	63.5	39.	-0.577	0.460	92.0	39.	0.199	0.181	83.0
71	38.	0.647	0.224	33.0	38.	0.612	0.227	52.0	38.	0.704	0.268	43.0	38.	0.592	0.457	9.0	38.	0.331	0.274	27.0
72	38.	0.508	0.262	80.0	38.	0.533	0.244	87.5	38.	0.632	0.228	77.0	38.	0.132	0.581	61.0	38.	0.208	0.207	80.0
73	37.	0.658	0.244	30.0	37.	0.581	0.240	68.0	37.	0.655	0.187	66.5	37.	0.243	0.515	49.0	37.	0.297	0.257	42.0
74	38.	0.680	0.245	20.0	38.	0.664	0.184	18.5	38.	0.796	0.180	5.0	38.	0.421	0.602	32.0	38.	0.398	0.265	5.0
75	36.	0.305	0.227	98.0	38.	0.671	0.191	13.0	37.	0.743	0.221	22.0	35.	-0.614	0.449	93.0	37.	0.152	0.188	90.0

HEALTH MANPOWER ASSESSMENT. RUN 3 = ALL STATES, GROUP B 196 RESPONDENTS

EVENT NO.	PROBABILITY NO.	AVE.	SD	RANK	CONFIDENCE NO.	AVE.	SD	RANK	SIGNIFICANCE NO.	AVE.	SD	RANK	DESIRABILITY NO.	AVE.	SD	RANK	IMPACT NO.	AVE.	SD	RANK
76	38.	0.464	0.268	86.0	38.	0.553	0.258	79.5	38.	0.783	0.174	10.0	38.	0.724	0.318	2.0	38.	0.205	0.199	81.0
77	39.	0.772	0.283	3.0	39.	0.801	0.206	1.0	39.	0.788	0.216	8.0	39.	0.333	0.663	41.5	39.	0.532	0.331	2.0
78	39.	0.695	0.201	19.0	39.	0.635	0.195	36.0	39.	0.776	0.158	12.0	39.	-0.744	0.318	99.0	39.	0.359	0.219	15.0
79	39.	0.638	0.213	37.0	39.	0.686	0.135	8.0	38.	0.743	0.203	21.0	38.	-0.263	0.646	78.5	38.	0.320	0.150	31.0
80	38.	0.645	0.221	33.5	38.	0.539	0.240	85.5	38.	0.513	0.262	97.0	38.	0.408	0.378	34.0	38.	0.233	0.234	69.0
81	38.	0.605	0.238	54.0	38.	0.656	0.202	23.0	38.	0.697	0.231	44.0	38.	-0.539	0.387	90.0	38.	0.302	0.219	40.0
82	36.	0.439	0.234	90.0	36.	0.639	0.161	32.0	36.	0.646	0.238	70.0	36.	-0.639	0.325	95.0	36.	0.209	0.192	79.0
83	38.	0.646	0.245	26.0	38.	0.618	0.220	50.0	38.	0.717	0.276	34.5	38.	0.579	0.466	10.0	38.	0.355	0.279	17.0
84	36.	0.633	0.236	43.0	38.	0.605	0.227	56.5	38.	0.711	0.203	38.5	38.	-0.039	0.622	70.5	38.	0.328	0.271	28.5
85	38.	0.577	0.234	58.5	38.	0.645	0.169	28.0	38.	0.783	0.174	10.0	38.	0.658	0.460	3.0	38.	0.328	0.225	28.5
86	38.	0.712	0.219	11.0	38.	0.632	0.188	39.0	38.	0.770	0.210	13.5	38.	0.632	0.392	5.0	38.	0.354	0.195	18.0
87	37.	0.624	0.204	48.0	37.	0.561	0.196	76.5	37.	0.676	0.246	53.0	37.	0.230	0.528	51.0	37.	0.251	0.178	64.0
88	38.	0.439	0.247	89.0	38.	0.546	0.206	83.0	38.	0.645	0.261	71.0	38.	0.066	0.552	65.0	38.	0.187	0.226	88.0
89	37.	0.754	0.144	5.0	37.	0.642	0.189	30.5	37.	0.716	0.178	36.0	37.	0.297	0.472	43.5	37.	0.378	0.215	11.0
90	38.	0.818	0.176	2.0	38.	0.743	0.186	4.0	38.	0.678	0.214	50.5	38.	0.461	0.370	25.5	38.	0.456	0.282	4.0
91	38.	0.570	0.244	66.0	38.	0.520	0.145	90.0	38.	0.638	0.220	74.0	38.	0.513	0.353	17.0	38.	0.210	0.175	78.0
92	38.	0.645	0.198	35.5	38.	0.605	0.187	56.5	38.	0.730	0.232	26.5	38.	0.618	0.333	6.0	38.	0.314	0.216	35.0
93	35.	0.594	0.253	63.0	35.	0.564	0.192	75.0	35.	0.743	0.174	24.0	35.	-0.400	0.571	84.0	35.	0.278	0.228	52.0
94	38.	0.605	0.270	53.0	38.	0.605	0.178	56.5	38.	0.783	0.208	10.0	38.	-0.645	0.525	96.5	38.	0.303	0.225	39.0
95	39.	0.495	0.278	85.0	39.	0.744	0.183	3.0	39.	0.769	0.222	15.0	39.	0.372	0.657	40.0	39.	0.281	0.249	50.0
96	39.	0.691	0.286	16.0	39.	0.622	0.226	46.5	39.	0.724	0.210	28.5	39.	0.513	0.512	18.0	39.	0.351	0.287	19.0
97	39.	0.673	0.219	25.0	39.	0.628	0.187	41.5	39.	0.667	0.268	60.0	39.	-0.295	0.540	81.0	39.	0.307	0.235	38.0
98	39.	0.597	0.202	57.0	39.	0.551	0.198	81.0	39.	0.660	0.215	63.5	39.	0.154	0.521	57.0	39.	0.232	0.184	70.0
99	36.	0.696	0.179	18.0	36.	0.556	0.205	78.0	36.	0.625	0.191	81.0	36.	0.514	0.363	16.0	36.	0.275	0.187	54.0

HEALTH MANPOWER ASSESSMENT. RUN 3 = ALL STATES. GROUP B TREND ANALYSIS

TREND NO.	MOVEMENT FREQUENCIES US	DMA	NONE	IMA	IS	STATE PROBABILITIES US	DMA	NONE	IMA	IS	MOVEMENT AVE.	S.D.	DES.MOVE.FREQ. DECR	NONE	INCR	DES. AVE.
1	1	0	1	7	30	0.0256	0.0000	0.0256	0.1795	0.7692	0.7974	0.4185	4	7	28	0.6154
2	4	9	3	15	8	0.1026	0.2308	0.0769	0.3846	0.2051	0.1487	0.5839	12	17	10	-0.0513
3	1	5	11	12	8	0.0270	0.1351	0.2973	0.3243	0.2162	0.2459	0.4734	8	12	17	0.2432
4	3	7	8	12	4	0.0882	0.2059	0.2353	0.3529	0.1176	0.0735	0.5008	11	14	9	-0.0588
5	1	1	5	17	14	0.0263	0.0263	0.1316	0.4474	0.3684	0.4684	0.4669	10	7	21	0.2895
6	4	3	10	19	2	0.1053	0.0789	0.2632	0.5000	0.0526	0.0737	0.4523	3	6	29	0.6842
7	7	15	7	5	4	0.1842	0.3947	0.1842	0.1316	0.1053	-0.1579	0.5585	25	10	4	-0.5385
8	1	0	2	16	20	0.0256	0.0000	0.0513	0.4103	0.5128	0.6103	0.4505	1	9	29	0.7179
9	1	2	1	14	20	0.0263	0.0526	0.0263	0.3684	0.5263	0.5947	0.4866	5	9	24	0.5000
10	0	5	1	15	18	0.0000	0.1282	0.0256	0.3846	0.4615	0.5385	0.4666	8	6	25	0.4359
11	1	0	0	14	24	0.0256	0.0000	0.0000	0.3590	0.6154	0.6974	0.4323	26	6	7	-0.4872
12	0	0	4	20	14	0.0000	0.0000	0.1053	0.5263	0.3684	0.5263	0.3725	19	14	5	-0.3684
13	0	1	1	18	19	0.0000	0.0256	0.0256	0.4615	0.4872	0.6179	0.3862	0	7	32	0.8205
14	3	10	5	12	7	0.0811	0.2703	0.1351	0.3243	0.1892	0.1243	0.5553	28	5	4	-0.6486
15	0	1	2	15	20	0.0000	0.0263	0.0526	0.3947	0.5263	0.6368	0.3983	33	4	1	-0.8421
16	0	1	2	16	17	0.0000	0.0278	0.0556	0.4444	0.4722	0.5972	0.3976	2	9	25	0.6389
17	2	4	7	17	8	0.0526	0.1053	0.1842	0.4474	0.2105	0.2605	0.4950	0	7	31	0.8158
18	0	2	7	26	4	0.0000	0.0513	0.1795	0.6667	0.1026	0.2872	0.2910	7	16	16	0.2308
19	0	8	4	17	10	0.0000	0.2051	0.1026	0.4359	0.2564	0.3256	0.4561	37	2	0	-0.9487
20	1	5	3	15	15	0.0256	0.1282	0.0769	0.3846	0.3846	0.4359	0.5161	38	0	1	-0.9487
21	0	10	3	11	15	0.0000	0.2564	0.0769	0.2821	0.3846	0.3923	0.5284	39	0	0	-1.0000
22	0	2	6	10	21	0.0000	0.0513	0.1538	0.2564	0.5385	0.6000	0.4540	39	0	0	-1.0000
23	0	2	6	18	11	0.0000	0.0541	0.1622	0.4865	0.2973	0.4270	0.4045	21	10	6	-0.4054
24	9	25	2	2	1	0.2308	0.6410	0.0513	0.0513	0.0256	-0.3821	0.4156	30	6	3	-0.6923
25	8	13	5	10	3	0.2051	0.3333	0.1282	0.2564	0.0769	-0.1513	0.5588	20	11	8	-0.3077
26	0	2	2	15	19	0.0000	0.0526	0.0526	0.3947	0.5000	0.6026	0.4208	5	15	18	0.3421

HEALTH MANPOWER ASSESSMENT, RUN 3 - ALL STATES, GROUP B TREND ANALYSIS

TREND NO.	MOVEMENT FREQUENCIES DS	DHA	NONE	IHA	IS	STATE PROBABILITIES DS	DHA	NONE	IHA	IS	MOVEMENT AVE.	S.D.	DES.MOVE.FREQ. DECR	NONE	INCR	DES. AVE.
27	0	3	2	16	18	0.0000	0.0769	0.0513	0.4103	0.4615	0.5615	0.4360	19	17	3	-0.4103
28	1	1	8	16	11	0.0270	0.0270	0.2162	0.4324	0.2973	0.3919	0.4605	2	6	29	0.7297
29	1	0	2	14	22	0.0256	0.0000	0.0513	0.3590	0.5641	0.6462	0.4523	0	5	34	0.8718
30	0	1	1	18	18	0.0000	0.0263	0.0263	0.4737	0.4737	0.6079	0.3862	1	2	35	0.8947
31	1	0	0	20	17	0.0263	0.0000	0.0000	0.5263	0.4474	0.5789	0.4311	1	2	35	0.8947
32	1	2	4	18	13	0.0263	0.0526	0.1053	0.4737	0.3421	0.4421	0.4694	5	4	29	0.6316
33	1	15	8	12	3	0.0256	0.3846	0.2051	0.3077	0.0769	0.0282	0.4051	18	7	14	-0.1026
34	2	1	8	24	4	0.0513	0.0256	0.2051	0.6154	0.1026	0.2282	0.3993	3	5	31	0.7179
35	10	18	4	6	1	0.2564	0.4615	0.1026	0.1538	0.0256	-0.3231	0.4828	3	4	32	0.7436
36	9	22	6	1	1	0.2308	0.5641	0.1538	0.0256	0.0256	-0.3667	0.4184	22	16	1	-0.5385
37	1	9	8	14	6	0.0263	0.2368	0.2105	0.3684	0.1579	0.1711	0.4576	7	4	27	0.5263
38	0	0	2	22	15	0.0000	0.0000	0.0513	0.5641	0.3846	0.5538	0.3587	7	16	16	0.2308
39	0	1	5	24	9	0.0000	0.0256	0.1282	0.6154	0.2308	0.4077	0.3496	1	2	36	0.8974
40	0	2	3	28	6	0.0000	0.0513	0.0769	0.7179	0.1538	0.3538	0.3128	0	2	37	0.9487
41	0	1	2	24	12	0.0000	0.0256	0.0513	0.6154	0.3077	0.4846	0.3613	1	3	35	0.8718
42	1	3	5	17	13	0.0256	0.0769	0.1282	0.4359	0.3333	0.4154	0.4823	2	7	30	0.7179
43	0	5	5	19	10	0.0000	0.1282	0.1282	0.4872	0.2564	0.3641	0.4233	1	5	33	0.8205
44	0	1	11	18	9	0.0000	0.0256	0.2821	0.4615	0.2308	0.3615	0.3793	3	6	30	0.6923
45	0	1	7	21	8	0.0000	0.0270	0.1892	0.5676	0.2162	0.3784	0.3558	1	2	34	0.8919
46	0	1	12	21	5	0.0000	0.0256	0.3077	0.5385	0.1282	0.2821	0.3153	0	10	29	0.7436
47	0	4	6	21	7	0.0000	0.1053	0.1579	0.5526	0.1842	0.3184	0.3769	3	4	31	0.7368
48	0	2	8	20	9	0.0000	0.0513	0.2051	0.5128	0.2308	0.3692	0.3811	1	6	32	0.7949
49	0	3	3	17	16	0.0000	0.0769	0.0769	0.4359	0.4103	0.5179	0.4338	27	5	7	-0.5128
50	1	0	4	23	11	0.0256	0.0000	0.1026	0.5897	0.2821	0.4333	0.4159	1	3	35	0.8718
51	0	2	6	19	12	0.0000	0.0513	0.1538	0.4872	0.3077	0.4385	0.4049	4	18	17	0.3333
52	0	1	3	22	12	0.0000	0.0263	0.0789	0.5789	0.3158	0.4816	0.3719	0	9	29	0.7632

HEALTH MANPOWER ASSESSMENT. RUN 3 = ALL STATES, GROUP B PROJECTION ANALYSIS

PROJECTION NO.	LOW ESTIMATE NO.	MEAN	S.D.	LIKELY ESTIMATE NO.	MEAN	S.D.	HIGH ESTIMATE NO.	MEAN	S.D.
1	35.	6.657	1.388	35.	8.486	2.628	36.	10.793	3.099
2	34.	5.206	1.243	35.	6.957	2.514	35.	8.400	2.664
3	36.	27.750	7.772	36.	37.167	8.840	37.	46.757	11.806
4	36.	7.000	7.371	36.	11.557	9.184	37.	17.162	12.879
5	34.	5.132	1.297	35.	6.357	1.412	34.	7.691	1.465
6	34.	6.279	1.668	34.	7.956	1.447	35.	10.700	1.829
7[1]	35.			35.			36.		
8[2]	36.	487.500	183.096	35.	597.143	196.739	35.	747.143	259.379

1. Respondents had difficulty with the basic unit of measurement (.06%) and hence the results are not useful.

2. Some respondents point out that the ratio of "1 per 700" refers to "total number of doctors" not just "general practitioners". Those who based their response on the G.P. ratio (roughly 1 per 1400) and those who expressed their response as the inverse ratio (roughly .0014) were excluded from these analyses. About 14 respondents were involved out of about 160 who answered the question at all.

HEALTH MANPOWER ASSESSMENT. RUN 4 = ALL STATES, GROUP C 196 RESPONDENTS

EVENT NO.	PROBABILITY NO.	AVE.	SD	RANK	CONFIDENCE NO.	AVE.	SD	RANK	SIGNIFICANCE NO.	AVE.	SD	RANK	DESIRABILITY NO.	AVE.	SD	RANK	IMPACT NO.	AVE.	SD	RANK
1	79.	0.694	0.269	43.0	79.	0.652	0.204	31.0	79.	0.775	0.181	15.0	79.	-0.487	0.457	91.0	79.	0.345	0.231	33.0
2	79.	0.541	0.226	78.0	79.	0.538	0.187	93.0	79.	0.737	0.254	28.5	76.	0.059	0.612	66.0	79.	0.214	0.151	81.0
3	78.	0.698	0.252	58.0	78.	0.651	0.213	33.0	77.	0.682	0.237	63.0	77.	-0.357	0.575	85.0	77.	0.293	0.232	55.0
4	78.	0.593	0.278	74.0	78.	0.663	0.207	21.5	78.	0.686	0.224	62.0	78.	-0.045	0.584	72.0	78.	0.272	0.211	67.0
5	79.	0.694	0.290	29.0	79.	0.661	0.222	24.5	77.	0.766	0.222	17.0	78.	-0.449	0.586	89.0	77.	0.381	0.278	20.0
6	79.	0.605	0.264	60.0	79.	0.617	0.198	61.0	79.	0.734	0.196	32.0	79.	-0.006	0.677	70.0	79.	0.284	0.212	59.0
7	79.	0.620	0.275	54.0	79.	0.687	0.180	13.0	79.	0.813	0.176	1.0	79.	-0.551	0.543	95.0	79.	0.364	0.254	24.0
8	78.	0.746	0.174	12.0	78.	0.667	0.199	18.5	78.	0.676	0.227	67.5	78.	0.545	0.410	18.0	78.	0.382	0.252	18.0
9	78.	0.674	0.220	31.0	77.	0.679	0.175	15.0	77.	0.789	0.176	5.0	77.	0.526	0.469	21.0	77.	0.388	0.233	15.0
10	77.	0.475	0.236	86.0	77.	0.536	0.155	94.0	77.	0.558	0.213	97.0	77.	0.182	0.496	55.0	77.	0.158	0.150	92.0
11	78.	0.517	0.254	81.0	78.	0.638	0.191	46.0	78.	0.724	0.218	37.5	78.	0.462	0.458	31.5	78.	0.259	0.198	70.0
12	79.	0.734	0.190	15.0	79.	0.671	0.171	16.5	79.	0.680	0.245	64.0	79.	0.525	0.449	22.5	79.	0.370	0.234	21.0
13	77.	0.605	0.285	59.0	77.	0.666	0.178	20.0	77.	0.782	0.218	7.5	77.	-0.013	0.688	71.0	77.	0.345	0.255	34.0
14	79.	0.747	0.200	10.0	79.	0.734	0.166	1.0	79.	0.782	0.166	9.5	79.	0.525	0.405	22.5	79.	0.460	0.261	4.0
15	78.	0.673	0.227	24.0	78.	0.667	0.199	18.5	78.	0.740	0.224	26.5	78.	0.551	0.471	17.0	78.	0.382	0.242	19.0
16	77.	0.594	0.245	73.0	77.	0.623	0.219	56.0	77.	0.688	0.206	59.0	77.	0.396	0.499	38.5	77.	0.281	0.210	61.0
17	78.	0.729	0.222	16.0	78.	0.663	0.222	21.5	78.	0.728	0.237	35.5	78.	0.628	0.396	6.5	78.	0.405	0.268	13.0
18	79.	0.592	0.243	67.0	79.	0.623	0.173	55.0	79.	0.668	0.241	72.5	77.	0.357	0.489	44.0	79.	0.284	0.227	60.0
19	78.	0.695	0.238	27.0	77.	0.636	0.211	47.0	77.	0.669	0.240	70.5	77.	-0.169	0.494	79.0	77.	0.337	0.248	36.0
20	79.	0.678	0.251	46.0	79.	0.646	0.197	37.5	79.	0.693	0.221	55.0	79.	0.538	0.412	19.0	79.	0.324	0.236	39.0
21	78.	0.653	0.232	37.0	78.	0.647	0.194	35.5	78.	0.654	0.231	76.5	78.	0.314	0.447	45.0	78.	0.312	0.226	46.0
22	77.	0.358	0.250	96.0	77.	0.640	0.173	45.0	77.	0.636	0.211	83.5	77.	0.026	0.540	68.0	77.	0.153	0.149	94.0
23	79.	0.842	0.187	1.0	78.	0.692	0.223	9.0	79.	0.759	0.184	19.5	79.	-0.051	0.571	74.0	78.	0.472	0.271	2.0
24	78.	0.636	0.258	46.0	77.	0.643	0.199	40.0	77.	0.640	0.237	81.0	77.	0.292	0.479	49.5	77.	0.302	0.247	52.0
25	78.	0.634	0.261	53.0	79.	0.630	0.221	50.0	79.	0.709	0.256	47.0	79.	0.304	0.603	48.0	78.	0.311	0.244	47.0

HEALTH MANPOWER ASSESSMENT. RUN 4 = ALL STATES. GROUP C 196 RESPONDENTS

EVENT NO.	PROBABILITY NO.	AVE.	SD	RANK	CONFIDENCE NO.	AVE.	SD	RANK	SIGNIFICANCE NO.	AVE.	SD	RANK	DESIRABILITY NO.	AVE.	SD	RANK	IMPACT NO.	AVE.	SD	RANK
26	79.	0.647	0.261	33.0	79.	0.661	0.207	24.5	79.	0.687	0.240	61.0	79.	0.013	0.606	69.0	79.	0.361	0.290	26.0
27	79.	0.618	0.268	55.0	79.	0.627	0.235	52.5	78.	0.795	0.207	3.0	79.	-0.405	0.627	87.0	78.	0.348	0.275	30.0
28	78.	0.609	0.255	57.0	78.	0.548	0.247	88.0	78.	0.696	0.249	54.0	78.	-0.551	0.457	96.0	78.	0.271	0.237	68.0
29	79.	0.596	0.262	66.0	79.	0.627	0.225	52.5	79.	0.703	0.229	51.5	79.	-0.348	0.473	84.0	79.	0.297	0.253	53.0
30	77.	0.675	0.237	52.0	77.	0.562	0.228	82.0	77.	0.679	0.248	65.5	77.	0.455	0.504	35.0	77.	0.291	0.232	56.0
31	78.	0.753	0.162	7.5	78.	0.660	0.223	27.5	78.	0.766	0.197	18.0	77.	0.604	0.354	8.0	78.	0.419	0.266	10.0
32	73.	0.570	0.251	68.0	73.	0.541	0.271	92.0	73.	0.596	0.257	92.0	73.	0.267	0.446	52.0	73.	0.258	0.261	71.0
33	75.	0.639	0.234	44.0	75.	0.603	0.216	68.0	75.	0.737	0.191	31.0	75.	0.373	0.511	41.0	75.	0.316	0.213	45.0
34	77.	0.694	0.206	23.0	77.	0.711	0.156	5.0	77.	0.636	0.269	83.5	77.	0.110	0.532	63.0	77.	0.336	0.231	37.0
35	77.	0.638	0.210	42.0	77.	0.545	0.196	89.0	77.	0.679	0.238	65.5	77.	0.565	0.389	15.0	77.	0.273	0.193	66.0
36	78.	0.601	0.272	63.0	78.	0.619	0.203	60.0	78.	0.654	0.241	76.5	77.	0.396	0.594	38.5	78.	0.279	0.229	63.0
37	78.	0.651	0.223	39.0	78.	0.612	0.207	63.0	78.	0.622	0.252	89.0	78.	-0.154	0.590	77.0	78.	0.258	0.197	72.0
38	79.	0.430	0.240	92.0	79.	0.551	0.208	86.0	79.	0.668	0.217	72.5	79.	0.158	0.577	58.0	79.	0.168	0.147	90.0
39	72.	0.596	0.216	65.0	72.	0.556	0.237	85.0	72.	0.580	0.253	94.0	73.	0.377	0.377	40.0	72.	0.238	0.219	77.0
40	70.	0.416	0.239	93.0	71.	0.504	0.232	96.0	70.	0.579	0.196	95.0	68.	-0.213	0.346	81.0	70.	0.122	0.116	97.0
41	78.	0.603	0.234	61.0	78.	0.564	0.217	80.0	77.	0.669	0.233	70.5	77.	0.071	0.585	65.0	77.	0.275	0.225	69.0
42	78.	0.779	0.174	2.0	79.	0.696	0.227	8.0	79.	0.782	0.180	9.5	79.	0.690	0.321	2.0	78.	0.479	0.275	1.0
43	77.	0.397	0.261	94.0	78.	0.603	0.213	69.0	77.	0.714	0.241	45.0	77.	-0.175	0.687	80.0	76.	0.177	0.151	89.0
44	78.	0.674	0.245	30.0	78.	0.651	0.213	33.0	78.	0.750	0.212	22.0	79.	0.494	0.497	25.5	78.	0.357	0.252	27.0
45	78.	0.715	0.222	19.0	78.	0.679	0.233	14.0	78.	0.801	0.228	2.0	78.	-0.660	0.442	98.0	78.	0.427	0.279	8.0
46	76.	0.636	0.212	47.0	76.	0.543	0.208	90.0	76.	0.651	0.219	78.0	76.	0.461	0.378	33.0	76.	0.248	0.176	74.0
47	77.	0.579	0.248	64.0	77.	0.581	0.215	76.0	77.	0.721	0.171	39.0	77.	0.481	0.373	28.0	77.	0.294	0.217	54.0
48	78.	0.715	0.204	20.0	78.	0.718	0.209	3.0	78.	0.708	0.210	48.0	78.	0.462	0.472	31.5	78.	0.399	0.279	14.0
49	76.	0.597	0.266	70.0	76.	0.645	0.191	39.0	76.	0.776	0.184	12.0	76.	0.487	0.532	27.0	76.	0.310	0.205	49.0
50	76.	0.626	0.209	51.0	78.	0.651	0.228	33.0	77.	0.731	0.149	33.0	76.	0.309	0.480	46.0	75.	0.319	0.216	43.0

HEALTH MANPOWER ASSESSMENT. RUN 4 = ALL STATES, GROUP C 196 RESPONDENTS

EVENT NO.	PROBABILITY NO.	AVE.	SD	RANK	CONFIDENCE NO.	AVE.	SD	RANK	SIGNIFICANCE NO.	AVE.	SD	RANK	DESIRABILITY NO.	AVE.	SD	RANK	IMPACT NO.	AVE.	SD	RANK
51	78.	0.521	0.243	80.0	78.	0.561	0.205	83.0	78.	0.590	0.212	93.0	78.	0.128	0.477	61.0	78.	0.197	0.164	86.0
52	75.	0.651	0.192	38.0	74.	0.605	0.225	65.0	74.	0.703	0.178	50.0	74.	0.534	0.371	20.0	74.	0.311	0.237	48.0
53	78.	0.524	0.257	79.0	78.	0.577	0.217	77.0	78.	0.615	0.211	90.0	78.	0.154	0.496	59.0	78.	0.199	0.173	85.0
54	79.	0.723	0.211	18.0	79.	0.671	0.205	16.5	79.	0.728	0.204	34.0	79.	0.576	0.299	11.0	79.	0.386	0.261	16.0
55	79.	0.516	0.238	82.0	79.	0.532	0.233	95.0	79.	0.623	0.238	88.0	78.	0.288	0.490	51.0	79.	0.213	0.198	82.0
56	77.	0.554	0.271	77.0	77.	0.620	0.216	59.0	77.	0.688	0.239	59.0	77.	0.084	0.512	64.0	77.	0.267	0.228	69.0
57	78.	0.753	0.185	7.5	78.	0.631	0.246	49.0	78.	0.705	0.236	49.0	78.	0.513	0.408	24.0	78.	0.369	0.255	22.0
58	79.	0.771	0.180	3.0	79.	0.690	0.229	10.0	79.	0.737	0.190	28.5	78.	0.596	0.300	9.0	79.	0.433	0.270	6.0
59	79.	0.791	0.160	4.0	79.	0.709	0.188	6.0	79.	0.794	0.202	4.0	79.	0.722	0.306	1.0	79.	0.471	0.253	3.0
60	75.	0.747	0.197	11.0	76.	0.641	0.238	41.0	75.	0.717	0.209	43.0	75.	0.560	0.374	16.0	75.	0.384	0.273	17.0
61	76.	0.450	0.279	90.0	76.	0.549	0.215	87.0	76.	0.661	0.297	74.0	76.	0.178	0.637	56.0	76.	0.194	0.224	87.0
62	78.	0.453	0.268	88.0	78.	0.647	0.213	35.5	78.	0.673	0.234	69.0	78.	-0.160	0.546	78.0	78.	0.226	0.229	80.0
63	78.	0.734	0.197	17.0	78.	0.689	0.193	11.5	78.	0.785	0.191	6.0	78.	0.571	0.437	12.5	78.	0.429	0.251	7.0
64	75.	0.601	0.254	62.0	75.	0.640	0.213	43.5	75.	0.633	0.239	85.0	75.	-0.493	0.404	92.0	75.	0.254	0.195	73.0
65	79.	0.370	0.258	97.0	79.	0.563	0.234	81.0	78.	0.638	0.273	82.0	78.	-0.096	0.661	75.0	78.	0.119	0.133	98.0
66	72.	0.676	0.231	50.0	74.	0.503	0.238	97.5	72.	0.549	0.249	98.0	72.	0.257	0.471	53.0	72.	0.208	0.224	83.0
67	70.	0.294	0.188	99.0	73.	0.469	0.223	99.0	71.	0.542	0.294	99.0	71.	-0.423	0.433	88.0	70.	0.077	0.089	99.0
68	72.	0.452	0.257	89.0	74.	0.503	0.231	97.5	72.	0.625	0.260	87.0	72.	-0.111	0.567	76.0	72.	0.158	0.176	93.0
69	77.	0.460	0.268	87.0	77.	0.597	0.206	71.0	77.	0.701	0.228	53.0	77.	0.175	0.568	57.0	77.	0.204	0.189	84.0
70	79.	0.513	0.267	83.0	79.	0.661	0.178	24.5	77.	0.656	0.255	75.0	77.	-0.526	0.426	94.0	77.	0.236	0.215	78.0
71	78.	0.695	0.168	26.0	78.	0.587	0.203	75.0	78.	0.676	0.197	67.5	78.	0.583	0.293	10.0	78.	0.305	0.224	51.0
72	77.	0.595	0.224	85.0	77.	0.558	0.180	84.0	76.	0.572	0.221	96.0	77.	0.214	0.525	54.0	76.	0.184	0.155	88.0
73	79.	0.646	0.238	34.0	79.	0.604	0.213	66.5	78.	0.692	0.226	56.0	77.	0.292	0.465	49.5	78.	0.320	0.239	41.0
74	78.	0.649	0.250	41.0	78.	0.660	0.165	27.5	78.	0.756	0.165	21.0	78.	0.494	0.463	25.5	78.	0.340	0.209	35.0
75	79.	0.301	0.187	98.0	79.	0.627	0.194	52.5	79.	0.715	0.177	44.0	78.	-0.359	0.554	86.0	79.	0.131	0.101	96.0

HEALTH MANPOWER ASSESSMENT. RUN 4 = ALL STATES, GROUP C 196 RESPONDENTS

EVENT NO.	PROBABILITY NO.	PROBABILITY AVE.	PROBABILITY SD	PROBABILITY RANK	CONFIDENCE NO.	CONFIDENCE AVE.	CONFIDENCE SD	CONFIDENCE RANK	SIGNIFICANCE NO.	SIGNIFICANCE AVE.	SIGNIFICANCE SD	SIGNIFICANCE RANK	DESIRABILITY NO.	DESIRABILITY AVE.	DESIRABILITY SD	DESIRABILITY RANK	IMPACT NO.	IMPACT AVE.	IMPACT SD	IMPACT RANK
76	77.	0.557	0.244	76.0	77.	0.597	0.206	71.0	77.	0.782	0.173	7.5	77.	0.669	0.357	3.0	77.	0.278	0.211	64.0
77	78.	0.754	0.229	6.0	78.	0.708	0.217	7.0	78.	0.744	0.208	24.5	78.	0.359	0.512	43.0	78.	0.413	0.258	11.0
78	79.	0.637	0.248	45.0	79.	0.661	0.187	24.5	79.	0.759	0.175	19.5	79.	-0.601	0.401	97.0	79.	0.331	0.205	38.0
79	78.	0.796	0.218	22.0	79.	0.725	0.181	2.0	78.	0.776	0.190	14.0	78.	0.038	0.674	67.0	78.	0.424	0.239	9.0
80	79.	0.670	0.250	32.0	79.	0.604	0.231	66.5	79.	0.614	0.272	91.0	79.	0.475	0.389	29.0	79.	0.290	0.257	57.0
81	79.	0.579	0.249	84.0	79.	0.636	0.181	48.0	79.	0.718	0.216	41.0	79.	-0.234	0.589	82.0	79.	0.244	0.194	76.0
82	78.	0.437	0.228	91.0	77.	0.594	0.193	73.0	78.	0.628	0.207	86.0	77.	-0.519	0.406	93.0	77.	0.168	0.138	91.0
83	78.	0.713	0.183	21.0	78.	0.609	0.214	64.0	78.	0.728	0.209	35.5	78.	0.667	0.317	4.0	78.	0.347	0.233	31.0
84	74.	0.651	0.196	33.0	74.	0.622	0.202	58.0	74.	0.689	0.196	57.0	74.	-0.047	0.552	73.0	74.	0.308	0.192	50.0
85	76.	0.616	0.220	56.0	77.	0.653	0.162	30.0	77.	0.776	0.174	13.0	77.	0.662	0.373	5.0	76.	0.320	0.185	42.0
86	79.	0.776	0.172	13.0	79.	0.627	0.217	52.5	79.	0.718	0.200	41.0	79.	0.570	0.353	14.0	79.	0.368	0.229	23.0
87	77.	0.678	0.252	49.0	77.	0.617	0.204	62.0	77.	0.711	0.206	46.0	77.	0.305	0.576	47.0	77.	0.317	0.240	44.0
88	79.	0.385	0.226	95.0	79.	0.566	0.220	79.0	79.	0.703	0.203	51.5	79.	0.114	0.557	62.0	79.	0.148	0.130	95.0
89	78.	0.750	0.153	9.0	78.	0.689	0.197	11.5	78.	0.744	0.192	24.5	78.	0.372	0.477	42.0	78.	0.408	0.216	12.0
90	78.	0.778	0.169	3.0	78.	0.712	0.220	4.0	78.	0.740	0.213	26.5	78.	0.417	0.434	37.0	78.	0.458	0.263	5.0
91	78.	0.590	0.227	69.0	78.	0.542	0.181	91.0	78.	0.641	0.221	80.0	78.	0.468	0.361	30.0	78.	0.230	0.174	79.0
92	78.	0.689	0.197	25.0	78.	0.657	0.175	29.0	78.	0.724	0.199	37.5	78.	0.628	0.325	6.5	78.	0.353	0.216	28.0
93	76.	0.596	0.247	71.0	76.	0.622	0.205	57.0	75.	0.747	0.166	23.0	75.	-0.460	0.438	90.0	75.	0.280	0.195	56.0
94	77.	0.658	0.228	36.0	77.	0.597	0.235	71.0	77.	0.769	0.201	16.0	77.	-0.682	0.402	99.0	77.	0.346	0.260	32.0
95	78.	0.596	0.239	72.0	78.	0.590	0.223	74.0	78.	0.779	0.196	11.0	78.	0.571	0.492	12.5	78.	0.280	0.187	62.0
96	79.	0.651	0.270	40.0	79.	0.646	0.193	37.5	79.	0.718	0.259	41.0	79.	0.456	0.547	34.0	79.	0.321	0.233	40.0
97	78.	0.698	0.215	26.0	78.	0.641	0.221	42.0	78.	0.737	0.223	30.0	77.	-0.312	0.490	83.0	78.	0.363	0.254	25.0
98	77.	0.591	0.227	75.0	78.	0.574	0.201	78.0	77.	0.688	0.210	59.0	78.	0.147	0.555	60.0	76.	0.246	0.179	75.0
99	75.	0.737	0.155	14.0	75.	0.640	0.232	43.5	74.	0.649	0.246	79.0	74.	0.426	0.346	36.0	74.	0.352	0.259	29.0

HEALTH MANPOWER ASSESSMENT. RUN 4 = ALL STATES, GROUP C TREND ANALYSIS

TREND NO.	MOVEMENT FREQUENCIES US	DHA	NONE	IHA	IS	STATE PROBABILITIES US	DHA	NONE	IHA	IS	MOVEMENT AVE.	S.D.	DES.MOVE.FREQ. DECR	NONE	INCR	DES. AVE.
1	0	5	3	22	49	0.0000	0.0633	0.0380	0.2785	0.6203	0.6848	0.4267	15	18	45	0.3846
2	12	11	4	32	20	0.1519	0.1392	0.0506	0.4051	0.2532	0.1810	0.6491	28	26	24	-0.0513
3	5	9	27	28	9	0.0641	0.1154	0.3462	0.3590	0.1154	0.1244	0.4547	18	22	37	0.2468
4	10	9	17	14	20	0.1429	0.1286	0.2429	0.2000	0.2857	0.1643	0.6566	26	20	23	-0.0435
5	2	8	2	28	35	0.0267	0.1067	0.0267	0.3733	0.4667	0.5200	0.5159	18	23	33	0.2027
6	4	12	13	39	8	0.0526	0.1579	0.1711	0.5132	0.1053	0.1592	0.4393	6	16	53	0.6267
7	9	21	24	16	7	0.1169	0.2727	0.3117	0.2078	0.0909	-0.0455	0.4990	31	26	19	-0.1579
8	0	6	3	41	27	0.0000	0.0779	0.0390	0.5325	0.3506	0.4870	0.4104	9	20	47	0.5000
9	1	1	9	42	25	0.0128	0.0128	0.1154	0.5385	0.3205	0.4654	0.4079	7	21	49	0.5455
10	0	4	5	31	37	0.0000	0.0506	0.0633	0.3924	0.4937	0.5962	0.4220	12	18	48	0.4615
11	1	3	11	24	40	0.0127	0.0380	0.1392	0.3038	0.5063	0.5734	0.4700	50	15	13	-0.4744
12	0	0	12	39	28	0.0000	0.0000	0.1558	0.5065	0.3377	0.4896	0.3789	26	40	10	-0.2105
13	0	2	6	17	54	0.0000	0.0253	0.0759	0.2152	0.6835	0.7405	0.3960	4	11	63	0.7564
14	16	33	7	17	5	0.2051	0.4231	0.0897	0.2179	0.0641	-0.2026	0.5347	69	5	3	-0.8571
15	0	1	3	33	41	0.0000	0.0128	0.0385	0.4231	0.5256	0.6487	0.3795	69	5	3	-0.8571
16	0	1	6	36	34	0.0000	0.0130	0.0779	0.4675	0.4416	0.5779	0.3883	11	15	48	0.5000
17	3	3	22	41	10	0.0380	0.0380	0.2785	0.5190	0.1266	0.2329	0.4005	3	5	70	0.8590
18	0	4	23	42	10	0.0000	0.0506	0.2911	0.5316	0.1266	0.2709	0.3250	6	19	53	0.6026
19	4	16	12	32	15	0.0506	0.2025	0.1519	0.4051	0.1899	0.2000	0.5052	64	6	8	-0.7179
20	1	7	8	34	28	0.0128	0.0897	0.1026	0.4359	0.3590	0.4500	0.4654	67	4	6	-0.7922
21	2	12	8	31	24	0.0260	0.1558	0.1039	0.4026	0.3117	0.3597	0.5084	70	0	6	-0.8421
22	0	1	7	33	37	0.0000	0.0128	0.0897	0.4231	0.4744	0.5974	0.3958	75	0	2	-0.9481
23	1	1	15	32	26	0.0133	0.0133	0.2000	0.4267	0.3467	0.4573	0.4364	30	28	16	-0.1892
24	14	52	9	2	1	0.1795	0.6667	0.1154	0.0256	0.0128	-0.3590	0.3546	64	10	3	-0.7922
25	13	25	22	14	3	0.1688	0.3247	0.2857	0.1818	0.0390	-0.1727	0.4728	52	16	8	-0.5789
26	0	7	4	42	25	0.0000	0.0897	0.0513	0.5385	0.3205	0.4551	0.4122	19	30	27	0.1053

HEALTH MANPOWER ASSESSMENT. RUN 4 - ALL STATES. GROUP C TREND ANALYSIS

TREND NO.	MOVEMENT FREQUENCIES US	DMA	NONE	IMA	IS	STATE PROBABILITIES US	DMA	NONE	IMA	IS	MOVEMENT AVE.	S.D.	DES.MOVE.FREQ. DECK	NONE	INCR	DES. AVE.
27	2	9	9	33	25	0.0256	0.1154	0.1154	0.4231	0.3205	0.3872	0.4947	48	23	6	-0.5455
28	0	1	7	47	23	0.0000	0.0128	0.0897	0.6026	0.2949	0.4718	0.3573	4	6	66	0.8158
29	0	0	6	37	35	0.0000	0.0000	0.0769	0.4744	0.4487	0.5910	0.3770	2	8	67	0.8442
30	0	2	4	38	34	0.0000	0.0256	0.0513	0.4872	0.4359	0.5744	0.3901	4	6	67	0.8182
31	0	0	6	42	30	0.0000	0.0000	0.0769	0.5385	0.3846	0.5462	0.3671	2	5	70	0.8831
32	0	2	16	44	15	0.0000	0.0260	0.2078	0.5714	0.1948	0.3584	0.3465	8	15	53	0.5921
33	10	25	15	20	7	0.1299	0.3247	0.1948	0.2597	0.0909	-0.0584	0.5196	35	21	19	-0.2133
34	1	3	10	38	26	0.0128	0.0385	0.1282	0.4872	0.3333	0.4551	0.4316	3	7	67	0.8312
35	13	38	12	13	2	0.1667	0.4872	0.1538	0.1667	0.0256	-0.2372	0.4415	8	8	61	0.6883
36	15	40	17	4	2	0.1923	0.5128	0.2179	0.0513	0.0256	-0.3051	0.4191	35	33	8	-0.3553
37	5	7	7	40	18	0.0649	0.0909	0.0909	0.5195	0.2338	0.2974	0.5150	10	3	63	0.6974
38	0	3	5	46	24	0.0000	0.0385	0.0641	0.5897	0.3077	0.4731	0.3747	32	24	21	-0.1429
39	0	1	4	55	16	0.0000	0.0132	0.0526	0.7237	0.2105	0.4237	0.3120	3	6	66	0.8400
40	0	3	6	46	23	0.0000	0.0385	0.0769	0.5897	0.2949	0.4603	0.3736	1	3	72	0.9342
41	0	2	3	40	33	0.0000	0.0256	0.0385	0.5128	0.4231	0.5692	0.3841	3	6	67	0.8421
42	0	2	8	44	24	0.0000	0.0256	0.1026	0.5641	0.3077	0.4692	0.3750	0	2	74	0.9737
43	0	4	14	47	13	0.0000	0.0513	0.1795	0.6026	0.1667	0.3321	0.3395	0	8	68	0.8947
44	0	2	16	47	13	0.0000	0.0256	0.2051	0.6026	0.1667	0.3397	0.3283	0	9	67	0.8816
45	0	4	11	50	12	0.0000	0.0519	0.1429	0.6494	0.1558	0.3351	0.3266	2	6	67	0.8667
46	1	3	15	49	9	0.0130	0.0390	0.1948	0.6364	0.1169	0.2831	0.3324	4	7	64	0.8000
47	0	5	16	42	15	0.0000	0.0641	0.2051	0.5385	0.1923	0.3346	0.3668	5	17	54	0.6447
48	0	0	15	49	15	0.0000	0.0000	0.1899	0.6203	0.1899	0.3759	0.3230	2	11	64	0.8052
49	1	13	23	26	14	0.0130	0.1688	0.2987	0.3377	0.1818	0.2195	0.4384	36	28	12	-0.3158
50	1	1	15	49	13	0.0127	0.0127	0.1899	0.6203	0.1646	0.3342	0.3500	1	4	72	0.9221
51	0	6	15	39	20	0.0000	0.0759	0.1899	0.4810	0.2532	0.3747	0.4036	11	37	29	0.2336
52	0	1	14	48	14	0.0000	0.0130	0.1818	0.6234	0.1818	0.3649	0.3254	4	11	60	0.7467

HEALTH MANPOWER ASSESSMENT. RUN 4 - ALL STATES, GROUP C PROJECTION ANALYSIS

PROJECTION NO.	LOW ESTIMATE NO.	MEAN	S.D.	LIKELY ESTIMATE NO.	MEAN	S.D.	HIGH ESTIMATE NO.	MEAN	S.D.
1	61.	6.767	1.380	62.	9.129	2.307	61.	11.475	4.057
2	63.	5.513	1.353	62.	6.984	1.903	61.	8.795	2.950
3	65.	26.000	6.204	66.	36.242	8.564	65.	44.600	10.998
4	66.	6.280	3.499	66.	12.985	10.325	66.	19.356	14.711
5	65.	4.985	1.703	66.	5.997	1.989	64.	7.789	2.293
6	66.	6.614	1.740	67.	8.134	1.774	66.	10.614	2.574
7 [1]	63.			64.			62.		
8 [2]	55.	563.636	243.918	56.	699.107	304.797	55.	921.818	393.442

1. Respondents had difficulty with the basic unit of measurement (.06%) and hence the results are not useful.

2. Some respondents pointed out that the ratio of "1 per 700" refers to "total number of doctors" not just "general practitioners". Those who based their response on the G.P. ratio (roughly 1 per 1400) and those who expressed their response as the inverse ratio (roughly .0014) were excluded from these analyses. About 14 respondents were involved out of about 160 who answered the question at all.

HEALTH MANPOWER ASSESSMENT. RUN 5 - ALL STATES, GROUP D 196 RESPONDENTS

EVENT NO.	PROBABILITY NO.	AVE.	SD	RANK	CONFIDENCE NO.	AVE.	SD	RANK	SIGNIFICANCE NO.	AVE.	SD	RANK	DESIRABILITY NO.	AVE.	SD	RANK	IMPACT NO.	AVE.	SD	RANK
1	23.	0.524	0.247	74.0	23.	0.609	0.178	37.0	23.	0.630	0.207	73.5	23.	-0.370	0.471	84.0	23.	0.199	0.140	71.0
2	23.	0.641	0.248	34.0	23.	0.576	0.155	63.5	23.	0.750	0.233	18.0	23.	0.478	0.477	31.5	23.	0.294	0.188	43.0
3	23.	0.539	0.297	59.5	23.	0.652	0.218	16.0	22.	0.716	0.204	38.0	22.	-0.682	0.355	96.0	22.	0.301	0.219	40.0
4	23.	0.547	0.271	66.0	23.	0.609	0.193	37.0	23.	0.587	0.203	87.0	23.	-0.283	0.507	83.0	23.	0.180	0.115	76.0
5	23.	0.630	0.277	44.0	23.	0.674	0.201	7.5	23.	0.750	0.221	18.0	23.	-0.696	0.436	98.0	23.	0.339	0.237	20.0
6	23.	0.648	0.209	39.0	22.	0.580	0.175	59.5	23.	0.717	0.153	36.0	23.	0.174	0.685	63.5	22.	0.293	0.173	44.0
7	23.	0.611	0.230	46.0	22.	0.648	0.163	18.5	23.	0.793	0.159	8.0	23.	-0.543	0.569	93.0	22.	0.337	0.199	23.0
8	23.	0.593	0.246	55.0	23.	0.598	0.242	44.5	23.	0.630	0.207	73.5	23.	0.500	0.361	28.5	23.	0.267	0.222	55.0
9	23.	0.593	0.256	55.0	23.	0.663	0.140	11.0	23.	0.750	0.209	18.0	23.	0.413	0.545	40.0	23.	0.335	0.242	26.0
10	21.	0.448	0.220	90.5	21.	0.476	0.203	92.5	21.	0.619	0.251	80.5	21.	0.310	0.475	52.0	21.	0.177	0.173	77.0
11	22.	0.511	0.236	70.0	22.	0.557	0.260	70.5	22.	0.727	0.167	32.0	21.	0.524	0.545	23.0	22.	0.200	0.142	70.0
12	22.	0.702	0.284	18.0	22.	0.580	0.276	59.5	22.	0.739	0.219	24.5	22.	0.705	0.359	8.5	22.	0.361	0.291	12.0
13	22.	0.670	0.295	52.0	22.	0.591	0.245	49.0	22.	0.818	0.172	1.5	22.	-0.205	0.702	78.5	22.	0.302	0.240	39.0
14	22.	0.657	0.231	35.0	22.	0.625	0.196	27.0	22.	0.739	0.159	24.5	22.	0.432	0.378	38.0	22.	0.319	0.228	33.0
15	22.	0.593	0.245	57.0	22.	0.580	0.218	59.5	21.	0.702	0.213	44.0	21.	0.619	0.342	16.0	21.	0.264	0.216	57.0
16	21.	0.526	0.302	72.0	21.	0.583	0.209	55.5	21.	0.667	0.236	60.5	21.	0.238	0.610	56.0	21.	0.251	0.243	62.0
17	23.	0.670	0.257	27.0	23.	0.696	0.194	3.0	23.	0.728	0.179	28.0	23.	0.522	0.580	26.0	23.	0.392	0.255	8.0
18	23.	0.600	0.255	53.0	23.	0.641	0.231	20.5	22.	0.807	0.167	4.0	22.	0.705	0.325	8.5	22.	0.313	0.248	37.0
19	22.	0.480	0.298	83.0	22.	0.591	0.233	49.0	23.	0.652	0.218	67.0	23.	-0.152	0.453	75.0	22.	0.215	0.247	67.0
20	23.	0.593	0.207	55.0	23.	0.620	0.207	29.0	23.	0.641	0.219	69.5	23.	0.457	0.388	34.0	23.	0.274	0.240	53.0
21	23.	0.619	0.220	41.0	23.	0.609	0.193	37.0	23.	0.652	0.242	67.0	23.	0.500	0.532	28.5	23.	0.282	0.235	48.0
22	23.	0.370	0.277	98.0	23.	0.554	0.194	73.0	23.	0.587	0.175	87.0	23.	0.000	0.442	67.5	23.	0.102	0.127	97.0
23	23.	0.774	0.228	5.0	23.	0.652	0.177	16.0	23.	0.576	0.238	92.5	22.	0.182	0.441	62.0	23.	0.315	0.212	36.0
24	22.	0.594	0.233	64.0	22.	0.602	0.209	41.5	23.	0.598	0.230	84.0	23.	0.413	0.458	40.0	22.	0.258	0.240	59.0
25	23.	0.741	0.186	7.5	23.	0.685	0.168	4.0	23.	0.609	0.219	82.0	23.	0.413	0.458	40.0	23.	0.334	0.221	29.0

HEALTH MANPOWER ASSESSMENT, RUN 5 - ALL STATES, GROUP D 196 RESPONDENTS

EVENT NO.	PROBABILITY NO.	PROBABILITY AVE.	PROBABILITY SD	PROBABILITY RANK	CONFIDENCE NO.	CONFIDENCE AVE.	CONFIDENCE SD	CONFIDENCE RANK	SIGNIFICANCE NO.	SIGNIFICANCE AVE.	SIGNIFICANCE SD	SIGNIFICANCE RANK	DESIRABILITY NO.	DESIRABILITY AVE.	DESIRABILITY SD	DESIRABILITY RANK	IMPACT NO.	IMPACT AVE.	IMPACT SD	IMPACT RANK
26	23.	0.687	0.208	22.0	22.	0.659	0.178	13.0	23.	0.707	0.175	40.5	23.	0.174	0.636	63.5	22.	0.330	0.181	30.0
27	23.	0.541	0.245	69.0	23.	0.587	0.203	53.5	23.	0.815	0.151	3.0	23.	-0.413	0.602	87.0	23.	0.267	0.207	56.0
28	22.	0.650	0.227	37.5	23.	0.500	0.255	87.0	22.	0.670	0.190	58.0	22.	-0.591	0.287	94.0	22.	0.238	0.190	66.0
29	22.	0.470	0.199	84.0	23.	0.500	0.209	87.0	22.	0.636	0.196	71.5	22.	-0.386	0.451	85.0	22.	0.176	0.191	79.0
30	23.	0.595	0.231	62.0	22.	0.545	0.194	76.5	23.	0.620	0.220	78.0	22.	0.500	0.426	28.5	22.	0.239	0.176	64.0
31	22.	0.646	0.217	29.5	22.	0.568	0.284	67.0	22.	0.750	0.199	18.0	22.	0.500	0.477	28.5	22.	0.337	0.255	24.0
32	18.	0.572	0.217	75.0	18.	0.597	0.148	46.0	18.	0.583	0.220	89.5	18.	0.194	0.413	60.0	18.	0.198	0.156	72.0
33	23.	0.630	0.194	43.0	23.	0.576	0.201	63.5	23.	0.685	0.184	48.0	23.	0.217	0.587	59.0	23.	0.278	0.224	51.0
34	22.	0.646	0.203	29.5	23.	0.652	0.205	16.0	23.	0.620	0.207	78.0	23.	0.000	0.511	67.5	22.	0.291	0.219	45.0
35	23.	0.724	0.172	14.0	23.	0.598	0.191	44.5	23.	0.728	0.207	28.0	23.	0.674	0.317	10.0	23.	0.357	0.215	14.0
36	23.	0.537	0.260	70.0	23.	0.543	0.175	79.0	23.	0.587	0.272	87.0	23.	0.435	0.473	37.0	23.	0.169	0.162	80.0
37	23.	0.589	0.208	59.5	23.	0.467	0.199	94.0	23.	0.500	0.295	98.0	22.	-0.205	0.359	78.5	23.	0.145	0.151	89.0
38	23.	0.373	0.225	95.0	23.	0.565	0.198	69.0	23.	0.663	0.190	62.0	23.	0.283	0.438	54.5	23.	0.129	0.086	92.0
39	20.	0.593	0.172	65.0	21.	0.417	0.248	98.0	20.	0.625	0.230	75.5	21.	0.452	0.342	36.0	20.	0.192	0.212	73.0
40	21.	0.467	0.243	86.0	21.	0.452	0.227	96.0	21.	0.583	0.223	89.5	21.	-0.262	0.548	82.0	21.	0.105	0.081	96.0
41	23.	0.663	0.168	32.5	23.	0.554	0.208	73.0	23.	0.707	0.204	40.5	23.	0.391	0.510	43.5	23.	0.299	0.219	41.0
42	20.	0.805	0.187	2.0	22.	0.727	0.198	2.0	22.	0.727	0.183	32.0	22.	0.727	0.291	5.5	20.	0.477	0.223	2.0
43	23.	0.430	0.243	90.0	23.	0.554	0.180	73.0	23.	0.641	0.274	69.5	23.	-0.478	0.375	92.0	23.	0.153	0.131	86.0
44	23.	0.741	0.159	7.5	23.	0.587	0.175	53.5	23.	0.620	0.243	78.0	23.	0.478	0.179	31.5	23.	0.279	0.159	50.0
45	23.	0.693	0.198	20.0	23.	0.674	0.187	7.5	23.	0.739	0.250	22.0	23.	-0.435	0.613	89.0	23.	0.338	0.175	21.0
46	23.	0.487	0.230	82.0	23.	0.533	0.153	81.0	23.	0.576	0.270	92.5	23.	0.391	0.416	43.5	23.	0.142	0.112	90.0
47	23.	0.535	0.236	71.0	23.	0.478	0.220	89.0	23.	0.652	0.230	67.0	23.	0.565	0.268	22.0	23.	0.180	0.180	75.0
48	23.	0.643	0.242	32.5	23.	0.641	0.219	20.5	23.	0.728	0.163	28.0	23.	0.283	0.462	54.5	23.	0.351	0.235	18.0
49	22.	0.690	0.176	25.0	22.	0.602	0.179	41.5	22.	0.682	0.202	51.0	22.	0.159	0.486	65.0	22.	0.281	0.168	49.0
50	22.	0.605	0.197	50.0	22.	0.523	0.212	83.0	22.	0.705	0.208	42.5	22.	0.318	0.414	51.0	22.	0.254	0.206	61.0

HEALTH MANPOWER ASSESSMENT. RUN 5 - ALL STATES, GROUP D 196 RESPONDENTS

EVENT NO.	PROBABILITY NO.	AVE.	SD	RANK	CONFIDENCE NO.	AVE.	SD	RANK	SIGNIFICANCE NO.	AVE.	SD	RANK	DESIRABILITY NO.	AVE.	SD	RANK	IMPACT NO.	AVE.	SD	RANK
01	21.	0.495	0.186	79.0	21.	0.476	0.187	92.5	21.	0.536	0.193	96.0	21.	-0.214	0.396	80.0	21.	0.141	0.124	91.0
02	22.	0.632	0.196	42.0	22.	0.500	0.250	87.0	22.	0.636	0.196	71.5	22.	0.568	0.228	20.5	22.	0.238	0.207	65.0
03	22.	0.418	0.241	93.0	22.	0.523	0.237	83.0	22.	0.659	0.207	64.0	22.	0.409	0.468	42.0	22.	0.167	0.197	81.0
04	22.	0.650	0.244	37.5	22.	0.636	0.235	24.0	22.	0.580	0.265	91.0	22.	0.455	0.424	35.0	22.	0.286	0.205	47.0
05	22.	0.525	0.190	73.0	22.	0.523	0.237	83.0	22.	0.625	0.223	75.5	22.	0.227	0.516	57.5	22.	0.210	0.203	68.0
06	22.	0.434	0.190	88.0	22.	0.545	0.208	76.5	21.	0.690	0.152	47.0	21.	-0.190	0.545	77.0	21.	0.166	0.101	82.0
07	21.	0.755	0.197	6.0	21.	0.619	0.251	31.0	21.	0.762	0.196	13.5	21.	0.643	0.314	14.0	21.	0.395	0.273	6.0
08	22.	0.741	0.142	9.0	22.	0.568	0.228	67.0	22.	0.750	0.185	18.0	22.	0.614	0.299	17.0	22.	0.367	0.268	11.0
09	22.	0.792	0.164	4.0	22.	0.670	0.158	9.5	22.	0.795	0.194	6.5	22.	0.773	0.291	1.0	22.	0.456	0.256	3.0
00	22.	0.646	0.242	29.5	22.	0.557	0.260	70.5	22.	0.659	0.245	64.0	22.	0.659	0.350	12.5	22.	0.316	0.276	34.0
01	22.	0.345	0.263	97.0	22.	0.534	0.204	80.0	22.	0.489	0.206	99.0	22.	-0.091	0.685	70.5	22.	0.091	0.120	98.0
02	22.	0.448	0.241	85.0	22.	0.477	0.237	90.5	21.	0.619	0.213	80.5	21.	-0.095	0.397	72.0	21.	0.157	0.170	85.0
03	22.	0.696	0.203	23.0	21.	0.619	0.166	31.0	21.	0.750	0.189	18.0	21.	0.595	0.250	18.5	21.	0.355	0.228	16.0
04	22.	0.411	0.223	94.0	22.	0.477	0.225	90.5	22.	0.602	0.179	83.0	21.	-0.476	0.545	91.0	22.	0.107	0.092	94.0
05	22.	0.473	0.261	91.0	22.	0.580	0.175	59.5	22.	0.591	0.220	85.0	22.	-0.045	0.601	69.0	22.	0.149	0.145	87.0
06	20.	0.603	0.226	51.0	20.	0.400	0.229	99.0	20.	0.513	0.279	97.0	19.	0.184	0.543	61.0	20.	0.106	0.101	95.0
07	20.	0.375	0.254	96.0	20.	0.425	0.225	97.0	20.	0.575	0.263	94.0	19.	-0.184	0.673	76.0	20.	0.080	0.077	99.0
08	20.	0.508	0.263	77.0	20.	0.463	0.227	95.0	20.	0.563	0.261	95.0	19.	-0.395	0.447	86.0	20.	0.146	0.159	88.0
09	22.	0.443	0.198	87.0	22.	0.545	0.162	76.5	22.	0.705	0.162	42.5	22.	0.364	0.481	47.0	22.	0.180	0.144	74.0
10	22.	0.495	0.228	78.0	22.	0.580	0.158	59.5	22.	0.682	0.202	51.0	22.	-0.659	0.316	95.0	22.	0.200	0.131	69.0
11	22.	0.723	0.169	14.5	22.	0.625	0.196	27.0	22.	0.739	0.206	24.5	22.	0.727	0.291	5.5	22.	0.371	0.223	9.0
12	22.	0.557	0.240	67.0	22.	0.602	0.179	41.5	22.	0.682	0.228	51.0	22.	0.341	0.437	50.0	22.	0.255	0.194	60.0
13	22.	0.584	0.244	63.0	22.	0.591	0.161	49.0	22.	0.682	0.202	51.0	22.	0.227	0.559	57.5	22.	0.244	0.169	63.0
14	22.	0.652	0.257	36.0	22.	0.682	0.172	5.5	22.	0.727	0.198	32.0	22.	0.364	0.643	47.0	22.	0.348	0.237	19.0
15	20.	0.245	0.150	99.0	20.	0.588	0.182	52.0	19.	0.763	0.172	12.0	18.	-0.250	0.651	81.0	19.	0.116	0.073	93.0

HEALTH MANPOWER ASSESSMENT. RUN 5 = ALL STATES, GROUP D 196 RESPONDENTS

EVENT NO.	PROBABILITY NO.	AVE.	SD	RANK	CONFIDENCE NO.	AVE.	SD	RANK	SIGNIFICANCE NO.	AVE.	SD	RANK	DESIRABILITY NO.	AVE.	SD	RANK	IMPACT NO.	AVE.	SD	RANK
76	22.	0.591	0.271	58.0	22.	0.568	0.241	67.0	21.	0.798	0.147	5.0	21.	0.667	0.356	11.0	21.	0.315	0.267	35.0
77	22.	0.709	0.204	17.0	22.	0.659	0.220	13.0	22.	0.693	0.184	45.5	22.	0.364	0.431	47.0	22.	0.359	0.235	13.0
78	22.	0.723	0.163	14.5	22.	0.614	0.180	34.0	21.	0.762	0.181	13.5	21.	-0.690	0.449	97.0	21.	0.337	0.163	22.0
79	22.	0.691	0.179	40.0	22.	0.625	0.223	27.0	22.	0.727	0.198	32.0	22.	-0.091	0.577	70.5	22.	0.335	0.221	27.0
80	22.	0.795	0.164	3.0	22.	0.659	0.256	13.0	22.	0.670	0.254	58.0	22.	0.568	0.378	20.5	22.	0.397	0.266	5.0
81	20.	0.473	0.230	92.0	21.	0.583	0.248	55.5	21.	0.679	0.157	54.5	20.	-0.150	0.502	74.0	20.	0.160	0.126	83.0
82	21.	0.498	0.224	80.5	21.	0.512	0.163	85.0	20.	0.675	0.211	56.0	19.	-0.421	0.591	88.0	20.	0.177	0.127	78.0
83	22.	0.795	0.202	12.0	22.	0.614	0.223	34.0	22.	0.682	0.252	51.0	22.	0.750	0.446	2.5	22.	0.355	0.261	15.0
84	21.	0.693	0.163	24.0	21.	0.571	0.246	65.0	21.	0.679	0.113	54.5	21.	0.048	0.460	66.0	21.	0.299	0.183	42.0
85	22.	0.618	0.225	46.0	22.	0.648	0.222	18.5	22.	0.784	0.156	9.5	22.	0.727	0.328	5.5	22.	0.334	0.218	28.0
86	22.	0.718	0.218	16.0	22.	0.682	0.202	5.5	22.	0.773	0.183	11.0	22.	0.750	0.250	2.5	22.	0.394	0.234	7.0
87	22.	0.691	0.189	21.0	22.	0.591	0.193	49.0	22.	0.784	0.156	9.5	22.	0.523	0.439	24.5	22.	0.352	0.221	17.0
88	22.	0.482	0.221	89.0	22.	0.580	0.231	59.5	22.	0.659	0.233	64.0	22.	0.386	0.425	45.0	22.	0.160	0.115	84.0
89	21.	0.726	0.137	11.0	21.	0.619	0.147	31.0	21.	0.667	0.209	60.5	21.	0.357	0.274	49.0	21.	0.328	0.167	31.0
90	22.	0.830	0.163	1.0	22.	0.773	0.167	1.0	22.	0.739	0.175	23.5	22.	0.523	0.319	24.5	22.	0.506	0.259	1.0
91	20.	0.678	0.257	49.0	20.	0.638	0.201	22.0	21.	0.726	0.187	35.0	21.	0.595	0.366	18.5	20.	0.286	0.186	46.0
92	22.	0.695	0.185	19.0	22.	0.636	0.210	24.0	22.	0.670	0.231	58.0	22.	0.636	0.223	15.0	22.	0.320	0.172	32.0
93	21.	0.548	0.240	68.0	21.	0.607	0.198	39.0	20.	0.750	0.158	18.0	20.	-0.475	0.580	90.0	20.	0.274	0.189	52.0
94	22.	0.734	0.236	10.0	22.	0.602	0.246	41.5	22.	0.727	0.212	32.0	22.	-0.750	0.446	99.0	22.	0.402	0.316	4.0
95	22.	0.620	0.236	45.0	22.	0.670	0.175	9.5	22.	0.818	0.187	1.5	22.	0.659	0.381	12.5	22.	0.335	0.186	25.0
96	22.	0.677	0.267	26.0	22.	0.636	0.223	24.0	22.	0.795	0.162	6.5	22.	0.727	0.391	5.5	22.	0.369	0.265	10.0
97	21.	0.598	0.246	61.0	22.	0.591	0.207	49.0	22.	0.716	0.189	38.0	20.	-0.125	0.471	73.0	21.	0.261	0.187	58.0
98	22.	0.614	0.178	47.0	22.	0.545	0.234	76.5	22.	0.716	0.204	38.0	22.	0.295	0.469	53.0	22.	0.270	0.231	54.0
99	22.	0.646	0.225	29.5	22.	0.614	0.164	34.0	22.	0.693	0.212	45.5	21.	0.476	0.393	33.0	22.	0.309	0.239	38.0

HEALTH MANPOWER ASSESSMENT. RUN 5 - ALL STATES, GROUP 0 TREND ANALYSIS

TREND NO.	MOVEMENT FREQUENCIES US	DMA	NONE	IMA	IS	STATE PROBABILITIES US	DMA	NONE	IMA	IS	MOVEMENT AVE.	S.D.	DES.MOVE.FREQ. DECR	NONE	INCR	DES. AVE.
1	1	0	1	2	18	0.0455	0.0000	0.0455	0.0909	0.8182	0.8000	0.4815	1	3	18	0.7727
2	1	4	0	11	6	0.0455	0.1818	0.0000	0.5000	0.2727	0.3227	0.5248	12	5	5	-0.3182
3	1	2	8	7	4	0.0455	0.0909	0.3636	0.3182	0.1818	0.2045	0.4714	3	8	11	0.3636
4	2	2	4	7	3	0.1111	0.1111	0.2222	0.3889	0.1667	0.1389	0.5509	5	7	6	0.0556
5	0	3	1	10	8	0.0000	0.1364	0.0455	0.4545	0.3636	0.4591	0.4539	6	2	14	0.3636
6	0	2	4	13	3	0.0000	0.0909	0.1818	0.5909	0.1364	0.2864	0.3402	2	3	17	0.6818
7	2	11	2	6	1	0.0909	0.5000	0.0909	0.2727	0.0455	-0.1136	0.4393	18	1	3	-0.6818
8	0	1	2	13	6	0.0000	0.0455	0.0909	0.5909	0.2727	0.4364	0.3736	2	1	19	0.7727
9	0	0	0	12	10	0.0000	0.0000	0.0000	0.5455	0.4545	0.6182	0.3486	3	4	15	0.5455
10	0	1	1	8	12	0.0000	0.0455	0.0455	0.3636	0.5455	0.6409	0.4141	2	6	14	0.5455
11	0	0	1	7	14	0.0000	0.0000	0.0455	0.3182	0.6364	0.7318	0.3598	8	2	11	0.1429
12	0	1	2	9	10	0.0000	0.0455	0.0909	0.4091	0.4545	0.5636	0.4216	4	12	3	-0.0526
13	0	0	2	9	11	0.0000	0.0000	0.0909	0.4091	0.5000	0.6227	0.3860	1	5	16	0.6818
14	2	12	0	3	4	0.0952	0.5714	0.0000	0.1429	0.1905	-0.0333	0.5907	18	0	3	-0.7143
15	0	1	1	10	10	0.0000	0.0455	0.0455	0.4545	0.4545	0.5773	0.4078	21	1	0	-0.9545
16	0	0	1	14	7	0.0000	0.0000	0.0455	0.6364	0.3182	0.5091	0.3410	3	6	12	0.4286
17	0	1	1	16	4	0.0000	0.0455	0.0455	0.7273	0.1818	0.3864	0.3195	0	1	21	0.9545
18	0	1	4	12	4	0.0000	0.0476	0.1905	0.5714	0.1905	0.3476	0.3541	2	5	13	0.5500
19	1	2	3	8	7	0.0476	0.0952	0.1429	0.3810	0.3333	0.3714	0.5346	18	3	0	-0.8571
20	0	2	3	5	11	0.0000	0.0952	0.1429	0.2381	0.5238	0.5667	0.4824	19	1	1	-0.8571
21	0	3	3	9	6	0.0000	0.1429	0.1429	0.4286	0.2857	0.3714	0.4463	21	0	0	-1.0000
22	0	1	4	8	8	0.0000	0.0476	0.1905	0.3810	0.3810	0.4810	0.4338	21	0	0	-1.0000
23	0	0	4	12	4	0.0000	0.0000	0.2000	0.6000	0.2000	0.3800	0.3311	10	7	3	-0.3500
24	2	17	1	1	0	0.0952	0.8095	0.0476	0.0476	0.0000	-0.3238	0.2599	15	4	2	-0.6190
25	4	4	4	7	2	0.1905	0.1905	0.1905	0.3333	0.0952	-0.0524	0.5746	15	3	3	-0.5714
26	1	0	3	7	9	0.0500	0.0000	0.1500	0.3500	0.4500	0.5050	0.5258	5	9	6	0.0500

HEALTH MANPOWER ASSESSMENT. RUN 5 - ALL STATES, GROUP D TREND ANALYSIS

TREND NO.	MOVEMENT FREQUENCIES US	DMA	NONE	IMA	IS	STATE PROBABILITIES US	DMA	NONE	IMA	IS	MOVEMENT AVE.	S.D.	DES.MOVE.FREQ. DECR	NONE	INCR	DES. AVE.
27	1	2	1	8	8	0.0500	0.1000	0.0500	0.4000	0.4000	0.4400	0.5490	14	5	1	-0.6500
28	0	0	2	14	5	0.0000	0.0000	0.0952	0.6667	0.2381	0.4381	0.3258	1	1	19	0.8571
29	1	0	1	9	11	0.0455	0.0000	0.0455	0.4091	0.5000	0.5773	0.4990	0	2	20	0.9091
30	0	1	0	10	11	0.0000	0.0455	0.0000	0.4545	0.5000	0.6227	0.3965	0	1	21	0.9545
31	0	0	2	11	8	0.0000	0.0000	0.0952	0.5238	0.3810	0.5381	0.3722	0	0	21	1.0000
32	0	0	3	10	9	0.0000	0.0000	0.1364	0.4545	0.4091	0.5455	0.3905	6	1	15	0.4091
33	2	7	3	8	1	0.0952	0.3333	0.1429	0.3810	0.0476	-0.0333	0.4539	11	1	9	-0.0952
34	0	1	8	8	5	0.0000	0.0455	0.3636	0.3636	0.2273	0.3227	0.3999	1	3	18	0.7727
35	1	10	8	2	1	0.0455	0.4545	0.3636	0.0909	0.0455	-0.1091	0.3579	3	4	14	0.5238
36	5	10	5	1	1	0.2273	0.4545	0.2273	0.0455	0.0455	-0.3045	0.4743	10	9	3	-0.3182
37	1	3	2	10	6	0.0455	0.1364	0.0909	0.4545	0.2727	0.3227	0.5169	6	3	13	0.3182
38	0	3	1	13	5	0.0000	0.1364	0.0455	0.5909	0.2273	0.3636	0.4006	8	7	6	-0.0952
39	0	2	3	14	3	0.0000	0.0909	0.1364	0.6364	0.1364	0.3000	0.3344	1	2	19	0.8182
40	0	1	4	10	7	0.0000	0.0455	0.1818	0.4545	0.3182	0.4409	0.4108	1	2	19	0.8182
41	0	1	3	10	8	0.0000	0.0455	0.1364	0.4545	0.3636	0.4864	0.4148	0	1	21	0.9545
42	0	1	3	12	6	0.0000	0.0455	0.1364	0.5455	0.2727	0.4227	0.3837	0	2	20	0.9091
43	0	1	1	16	4	0.0000	0.0455	0.0455	0.7273	0.1818	0.3864	0.3195	1	2	19	0.8182
44	0	0	4	11	6	0.0000	0.0000	0.1905	0.5238	0.2857	0.4429	0.3698	0	1	20	0.9524
45	0	0	8	12	2	0.0000	0.0000	0.3636	0.5455	0.0909	0.2545	0.2742	0	2	20	0.9091
46	0	0	5	14	3	0.0000	0.0000	0.2273	0.6364	0.1364	0.3273	0.2942	0	2	20	0.9091
47	0	2	4	12	4	0.0000	0.0909	0.1818	0.5455	0.1818	0.3182	0.3713	0	4	18	0.8182
48	0	3	3	11	5	0.0000	0.1364	0.1364	0.5000	0.2273	0.3364	0.4140	0	3	19	0.8636
49	1	3	4	8	6	0.0455	0.1364	0.1818	0.3636	0.2727	0.2955	0.5253	11	5	6	-0.2273
50	0	0	4	16	1	0.0000	0.0000	0.1905	0.7619	0.0476	0.2762	0.1998	0	0	21	1.0000
51	0	2	1	13	6	0.0000	0.0909	0.0455	0.5909	0.2727	0.4227	0.3942	2	10	10	0.3636
52	0	0	3	16	3	0.0000	0.0000	0.1364	0.7273	0.1364	0.3545	0.2759	0	0	22	1.0000

HEALTH MANPOWER ASSESSMENT. RUN 5 - ALL STATES, GROUP D PROJECTION ANALYSIS

PROJECTION NO.	LOW ESTIMATE NO.	MEAN	S.D.	LIKELY ESTIMATE NO.	MEAN	S.D.	HIGH ESTIMATE NO.	MEAN	S.D.
1	17.	6.929	1.262	18.	9.328	2.887	18.	11.278	4.161
2	18.	5.567	1.196	18.	6.861	1.964	18.	8.194	2.490
3	20.	26.850	5.730	20.	38.150	6.850	20.	45.350	8.434
4	20.	6.400	2.458	20.	11.875	6.641	20.	17.325	13.664
5	18.	5.739	1.779	18.	7.389	4.480	18.	9.639	8.767
6	19.	6.237	1.281	19.	7.842	1.089	19.	9.684	1.453
7[1]	19.			19.			19.		
8[2]	17.	614.706	230.870	17.	713.235	335.642	16.	856.250	436.203

1. Respondents had difficulty with the basic unit of measurement (.06%) and hence the results are not useful.

2. Some respondents pointed out that the ratio of "1 per 700" refers to "total number of doctors" not just "general practitioners". Those who based their response on the G.P. ratio (roughly 1 per 1400) and those who expressed their response as the inverse ratio (roughly .0014) were excluded from these analyses. About 14 respondents were involved out of about 160 who answered the question at all.

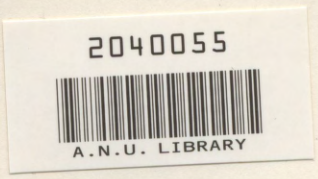
Other publications in the Research Monograph Series:

No. 1 A General Approach to the Analysis of Public Resource Allocation. J. Cutt and J. Tydeman, 1976.

No. 2 Income Support Policy in Australia: A Dynamic Approach. J. Cutt, J. Dixon and Barry Nagorcka, 1977.

No. 3 Subjective Futures for Decision Making. J. Tydeman and R. Mitchell, 1977.

No. 4 Resource Allocation for Tertiary Education in Australia. J. Cutt, 1977.



Distributed by the Administrative Studies Program
ANU, PO Box 4 Canberra ACT 2600 Australia
Designed by ANU Graphic Design
Printed by ANU Central Printing

ISBN 0 908160 05 4