

# Strategic Planning for Public Health Practice Using Macroenvironmental Analysis

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## Synopsis .....

*Macroenvironmental analysis is the initial stage in comprehensive strategic planning. The authors examine the benefits of this type of analysis when applied to public health organizations and present a*

*series of questions that should be answered prior to committing resources to scanning, monitoring, forecasting, and assessing components of the macroenvironment.*

*Using illustrations from the public and private sectors, each question is examined with reference to specific challenges facing public health. Benefits are derived both from the process and the outcome of macroenvironmental analysis. Not only are data acquired that assist public health professionals to make decisions, but the analytical process required assures a better understanding of potential external threats and opportunities as well as an organization's strengths and weaknesses.*

*Although differences exist among private and public as well as profit and not-for-profit organizations, macroenvironmental analysis is seen as more essential to the public and not-for-profit sectors than the private and profit sectors. This conclusion results from the extreme dependency of those areas on external environmental forces that cannot be significantly influenced or controlled by public health decision makers.*

**D**EVELOPING IMPROVED MANAGEMENT capabilities in public health practice is of rapidly growing interest, partly in response to "The Future of Public Health," issued by the Institute of Medicine (IOM) (1).

An effective way to build public health management capabilities is to review management experiences and evaluate the application of techniques that have proved useful to managers in other sectors. Strategic planning is a management method that is particularly deserving of evaluation because of its use and refinement in the private sector during the past several decades.

Strategic planning is attracting the interest of leaders in the general public sector, and specifically in public health practice. A few State health departments have experimented with it, and the Centers for Disease Control (CDC) has begun discussions with State planning representatives on major issues of interest. However, the use of macroenvironmental analysis, the foundation of effective strategic planning, appears to be almost nonexistent in public health organizations.

A recent survey by CDC of 41 State health departments, for example, indicated that only 28 have multiple-year objectives, and only 21 have committed themselves to having objectives for the year 2000 (2, 3). None of the departments surveyed indicated that they were engaged in systematic macroenvironmental analysis.

## Importance to Public Health Practice

Macroenvironmental analysis is concerned with forces external to an industry, which in this paper is public health. The external focus is predicated on a belief that largely uncontrollable forces affect public health and the national, State, and local organizations that comprise the system (4).

The emphasis placed by IOM on developing capabilities for macroenvironmental analysis in public health is quite specific. For example, the authors of the IOM report noted that "Public health agencies must have the capacity for...an organizational evaluation and change in response to changes in the agency environment and its social

milieu." The report recommended that "Greater emphasis in public health curricula should be placed on managerial and leadership skills such as...the ability to sense and deal with important changes in the environment" (1a).

Public health managers recognize the importance of the environment in which they operate. The 1979 publication, "Healthy People, The Surgeon General's Report on Health Promotion and Disease Prevention" (5), for example, emphasized the importance of macroenvironmental factors such as lifestyle and demographics in disease prevention and health promotion. In spite of this recognition, a clear articulation of the value of macroenvironmental analysis is needed.

### **Evidence of the Need**

Several facts about the health system in the United States provide perspective to this view.

- In spite of economic prosperity, more than one-third of the population either has no physician, clinic, or hospital, or has extreme difficulty in accessing one, largely for financial reasons.
- Despite enjoying one of the world's highest standards of living, the country is 19th in infant deaths.
- Despite clear data verifying the aging of the population, the country faces a nursing home crisis requiring the construction of 220 nursing home beds per day until the year 2000, simply to meet demand.

Effective macroenvironmental analysis would not have changed the trends that created these situations, but it might have helped public health decision makers to prepare better for these events before they reached crisis proportions.

Some argue that the complexity of the public health environment is too great for macroenvironmental analysis to produce any practical product, much less to contribute to effective solutions to important problems. This argument, however, loses credibility in the light of success stories in equally complex environments. For example, one major international oil company, Royal Dutch/Shell, using a scenario planning technique emphasizing macroenvironmental shifts, was able to foresee the probability of a major world oil crisis before 1973. An understanding of macroenvironmental forces at work enabled the company to sell excess inventory before the oil surplus of 1981. Few processes are more complicated than developing systems to assist

in understanding worldwide supply and demand factors related to crude oil (6, 7).

Others may protest that problems in the public sector are unique and that the experience of private sector firms cannot be applied to public health. While it is true that the environment in the public sector is different from that confronted by profit oriented firms, research consistently confirms that managerial behaviors required to respond to uncontrollable environmental forces are remarkably similar in both settings (8). In fact, the basic managerial challenges in the public and private sectors are quite similar. There is a mission to accomplish, goals to achieve, strategies to be designed and implemented, resources to be acquired and efficiently allocated, and organizational effectiveness to be achieved.

At the same time, the ground rules admittedly are different. In the public sector, decision makers must live with budget constraints rather than create profits. They are forced to win support for programs without the aid of profit incentives, deal with a lack of flexibility caused by categorical funding, and be more sensitive to the organization's public image (9). These differences, however, make macroenvironmental analysis even more important in the public sector, where dependency on external constituencies is even greater than in the private sector.

### **Output and Process**

According to Fahey and Narayanan, "The value of macroenvironmental analysis inheres in the product of the analysis as well as the process of engaging in it" (4a). The outputs or products are descriptions of changes currently taking place, alternative harbingers of potential changes in the future, and alternative descriptions of future change.

Collectively, the outputs provide descriptions of potentially different futures. Such descriptions provide organizations with lead time to identify, understand, and adapt to external issues; to anticipate the consequences of macroenvironmental trends; and to develop well conceived positions and policies. In addition, lead time enables organizations to convert emerging issues from threats to opportunities.

The process of macroenvironmental analysis underscores the notion that organizations are incessantly subject to the influence of outside forces. When conducted properly, macroenvironmental

analysis leads to enhanced strategic capacity and to commitment to understanding, anticipating, and responding to external changes on the part of the organization's strategic decision makers. Responsiveness is achieved by introducing managers to the environments of their own industry and forcing them to reconsider and evaluate their biases. In short, the process of macroenvironmental analysis offers a basis for organizational learning (4b).

Those with a clinical perspective will recognize this as analogous to what a physician does for a patient in an annual physical examination. Various diagnostic technologies are used to define any changes that may be in process. These data are used to decide if the likely future course of these changes warrants an intervention of a preventive or therapeutic nature and allow the physician to formulate a relevant prognosis. The prognosis is like a description of different potential futures.

The impact, whether for a patient or an organization, is the same. The process provides lead time to identify, understand, and adapt. Without the physical examination, the patient receives no help until the crisis or symptomatic pathology is present. Without careful analysis of trends in the macroenvironment, the organization lacks time to avert a crisis reaction.

## Applications in Public Health

An example of the importance of understanding macroenvironmental trends in public health practice can be seen in the effort to link process to outcome in health care. The importance of being able to establish process-outcome links in public health has been known in one form or another for generations through the work of Codman (10) in surgery, Chadwick (11) in sanitary reform, Jenner (12) in immunization, and Holmes and Semmelweis (13) in antisepsis.

The importance of process-outcome links for health policy and resource allocation decisions has been increasing for more than 20 years. Donabedian (14) provided the conceptual foundation a quarter century ago. More recently, the Joint Commission on Accreditation of Health Organizations announced its intent 3 years ago to "look to the future" and build outcome measures into its accreditation process (15).

In the 20 years between Donabedian and the Joint Commission, the environmental signals on the importance of process-outcome links have been growing more intense. Public health practice has acknowledged this trend as it seeks to redesign its

only national data collection mechanism, the Association of State and Territorial Health Officials Reporting System (16), to concentrate on demonstrated relationships between interventions and outcomes. Useful information, unfortunately, is years away and the lack of effective methods to identify, monitor, forecast, and assess important macroenvironmental trends has led to missed opportunities and reactive management style.

Of course, public health is not alone in failing to develop strategic planning capabilities. Private industry demonstrates that poor monitoring of macroenvironmental trends can lead to corporate decline. Caterpillar Tractor Company during the 1960s established a reputation of passive market strategies that allowed competitors like International Harvester and Clark Equipment Company to gain market share with less expensive and more efficient front-end loaders. During the 1970s the passive reputation was reinforced by Caterpillar's tardy response to lower priced foreign competition like Komatsu, Ltd. It was not until the early 1980s that Caterpillar began aggressively countering domestic and foreign competition by downsizing its workforce, taking a portion of its manufacturing operations overseas to reduce costs, upgrading and modernizing its factories, and buying equipment from the lowest cost sources rather than insisting on making everything it sold.

A primary reason for the success of Japanese automobile makers is the consistent failure of most American car companies to respond to demographic and lifestyle changes. Ford Motor Company's market success with the Taurus and Sable automobiles (radical designs that required 5 years to develop) resulted from an early recognition of society's emerging preference for what was perceived as superior product design (function plus fashion). The lead time required in automotive product development (similar to the lead time needed in national data collection efforts) is evidence that the success of Ford's Taurus-Sable product was the result of proactive responses by management to important macroenvironmental signals.

## Initial Questions

As a practical matter, before beginning macroenvironmental analysis, organizations need to ask some important questions.

- Does my organization really need some type of formal macroenvironmental analysis?

## Structure of Macroenvironment Scan Conducted by United Way of America

<i>Change driver</i>	<i>Macroenvironment</i>	<i>Planning assumption</i>	<i>Implication</i>
Maturation of America Mosaic pattern of society Redefinition of individual and societal roles Information-based economy Globalization Economic restructuring Personal and environmental health Family and home redefined Rebirth of social activism	Economic Political Social Technological Regional	More than 100 specific planning assumptions centered around the macroenvironments and change drivers	11 economic 4 political 32 social 7 technological 2 regional

- If the answer is yes, what areas of the macroenvironmental should be analyzed?
- What information is needed to adequately analyze the relevant areas of the macroenvironment and where do we get it?
- How do we analyze the macroenvironment and what trends do we look for?

These questions have been addressed sufficiently in the literature of management to offer some practical guidelines to public health managers (17). There are good examples from the not-for-profit area that are particularly relevant to professionals in public health.

Since 1980, United Way of America has engaged in comprehensive strategic planning. This experience is particularly relevant to public health because of the concerns that are shared by both organizations, such as drug abuse, family violence, and problems of the elderly. United Way continues to develop a comprehensive, highly sophisticated macroenvironmental analysis process by marshaling the expertise of private sector firms and resources from a variety of sources (18). The structure of the United Way analysis is shown in the accompanying box.

The analysis identified nine leading environment forces, called change drivers, that were reshaping society. With regard to each, planning assumptions were developed by focusing on five major components of the macroenvironment: the social, economic, political, regional, and technological components.

More than 150 planning assumptions were generated under the nine change drivers with four macroenvironments each. Finally, nearly 70 implications for United Way were produced from the data. The experience of United Way will be used to answer some of the questions raised.

### Response to Macroenvironmental Analysis

The need to understand and monitor the macroenvironment is related to how much the organization must interact with and respond to its environment. Although all enterprises are influenced by the macroenvironment, some are more susceptible to environmental influences than others. It is generally agreed that those most susceptible are organizations that are large, have diverse service responsibilities, require large investment, face complex and turbulent markets, and experience highly competitive threats (19).

Such a description is meaningful to experienced public health managers, because it suggests that public health organizations are among the most susceptible to environmental influences. If the reference to competitive threats seems irrelevant, consider legislative sessions and the competition for tax dollars. Public health competes for financial resources as surely as Ford or General Electric.

Owing to its governmental nature, public health is one of the most environmentally sensitive of all professional practice settings, interacting with its environments at many points. Monitoring and analysis of macroenvironmental trends by public health management is a critical component of the effort to prepare for proaction and to leave behind the IOM's perception of public health as a "system in disarray." Illustrations of this environmental dependency are, for example, estimated cost increases of 18 percent in health care during 1990, which will bring health care costs to more than 12 percent of the gross national product (\$1 of every \$8 in the economy), making the economic and political environments particularly important (20).

The environmental sensitivity of the organization can be more specifically understood through questions posed by Mesch (21), based on his experience

at Sun Exploration and Production Company, and developed as specific criteria for assessing an organization's need for macroenvironmental analysis. Consider public health practice in the context of

- the extent to which factors external to the health department influence capital allocations and internal decision making,
- how often long-range plans have been scrapped because of unexpected changes in the external environment,
- the frequency with which changes in the external environment would be characterized as unpleasant surprises,
- the extent to which the number of external forces influencing decision making are increasing and becoming more interrelated, and
- how dissatisfied public health managers are with past forecasting and planning efforts.

The more descriptive the factors are of a particular organization, the greater is the need for adding to or expanding its macroenvironmental analysis effort.

### **Choice of Macroenvironments for Analysis**

After establishing the need for the analysis, the next question is which areas of the macroenvironment should we scan, monitor, forecast, and assess? The theoretical and empirical literature on management suggests a need to engage in scanning, monitoring, forecasting, and assessing at least the macro social, economic, technological, and political-regulatory environments. All are highly relevant to public health, since it is no longer sufficient to focus only on events and trends in the health care sector.

In the case of United Way, four familiar areas of the macroenvironment, the economic, political, social, and technological; and one unique area, regional considerations; were identified as important for analysis. In addition, regional forces could impact on individual United Way affiliates, and potential variations were incorporated.

Analysis of the different components of the macroenvironment involves the study of current and potential change and the assessment of the impact of changes on the organization. Trends within macroenvironmental categories have profound effects on organizations within public health practice, as for example the aging of the world population, the shift from manufacturing to service industries, the breakdown of East-West travel and

trade restrictions, and the decreasing costs of high technology biochemical research equipment. It is important for managers to acknowledge these forces and others, and to study their potential impact.

Public health managers need to consider the implications of regulatory realities. There is, for example, a worldwide trend toward privatization of government-controlled enterprise (22). While this is seen most directly in eastern Europe, and perhaps in parts of Central America, such a trend foreshadows the increasing diversity of health care delivery systems as the private sector seeks to supply local needs and competes to provide socially mandated health programs.

In 1984 the United States spent almost \$400 billion on health care, or about \$1,600 per person, of which \$460 was spent by the Federal Government, \$25 by State governments, and about \$10 by local governments. In total, about 31 percent was spent by government at all levels. By 1988 the per capita expenditure had increased to \$2,000, with government accounting for more than 40 percent of the expenditure. However, trends suggest that health care as well as other sectors of the economy could experience privatization pressure.

Public opinion surveys by Biendon (23) indicate a willingness by many citizens to pay for additional health care from public coffers only as long as the country experiences economic growth. There is little reason to believe that health care alone will escape the forces of privatization evident in other areas. If it does, there is more reason to be prepared for countercyclical changes.

Public health departments need analysis capabilities in at least the four macroenvironmental areas mentioned. However, since these external environments are vast and diverse, managers must carefully select from their experience the most promising trends and events for analysis. Good judgment and economic common sense demand that we "restrain executives from roaming the external environment with enthusiastic indiscipline" (24).

### **Obtaining Needed Information**

Managers are frequently concerned about the amounts and sources of information needed for macroenvironmental analysis. Sometimes little is necessary for strategic decisions, while at other times we need large amounts of information. As might be expected, the need increases with the urgency, magnitude, unfamiliarity, and long term nature of the decision under consideration.

In general, organizations use a number of inside and outside information sources. Some of the more useful inside personal sources are employees, superiors, and peers. Impersonal inside sources are reports, memorandums, and meetings. Among outside personal sources are patients, suppliers, consultants, chance encounters, and accidental events. Impersonal outside sources are newspapers, conferences, and reports. Inside sources should always be intensively exploited. Outside sources should be used to differing extents, depending on the nature of the decision under consideration.

For most health departments, personal sources greatly exceed impersonal sources in terms of importance. Inside the department, subordinates and other managers are the greatest source of information. In fact, most health departments have access internally to far more information than expected. Vast amounts of data relevant to decision making are available to geographically dispersed regional health departments from professional personnel, especially physicians, nurses, epidemiologists, social workers, lawyers, and senior executives. People inside a health department are able to provide rich and valuable professional, technological, and political information that may not be available elsewhere.

Outside sources also include clients, legislators' and their staffs, academics, consultants, professional associations and, through chance encounters, persons outside the public health organization who have strategic information. External impersonal sources are health related trade and academic publications and conferences and the activities of relevant trade associations. Outside agencies that supply forecasts and technical information about the macroenvironment can be useful, as are private consultants. Forecasts produced outside the organization typically consider a broad range of issues and variables and often fill gaps left in the less objective analyses of inhouse staff. Consultants will provide studies on topics selected by the analysis staff and can provide more objective assessments than the staff of the information uncovered in the process of analysis .

### **Analyzing Important Trends**

According to Dill, "At one level, environment is not a very mysterious concept. It means the surroundings of an organization; the 'climate' in which an organization functions. The concept becomes challenging when we try to move from simple description of the environment to analysis

*'Public health managers need to consider the implications of regulatory realities. There is, for example, a worldwide trend toward privatization of government controlled enterprise.'*

of its properties" (25a). This not-so-mysterious concept is difficult to actually analyze with an eye to decision making. It requires that one follow a relatively well defined approach consisting of four interrelated activities, each of which we illustrate with a United Way analysis example.

- *Scanning macroenvironments for warning signs and possible environmental changes that will affect the organization.* Beginning in 1980, United Way of America began an effort to alert volunteers and professional staff about important changes in the macroenvironment that could affect the operations of the agency. An environmental scan committee was organized that identified nine change drivers. Some are expected to be disruptive while others offer an opportunity to "strengthen America's social and economic fabric."

- *Monitoring environments for specific trends and patterns.* By keeping track of the change drivers over a period, a series of planning assumptions were developed relative to each. This is a dynamic process, as evidenced by the fact that in the most recent update of the monitoring process, of more than 150 planning assumptions, 68 percent are new and based on changes detected in the change driver monitoring process during the last decade.

- *Forecasting future directions of environmental change.* Attempts to forecast changes in the change drivers is an ongoing process of the full-time staff in the United Way Strategic Institute. For example, in 1988, the Institute staff coordinated a study, "The Future World of Work: Looking Toward the Year 2000." United Way's Environmental Scan Committee identified 43 work-related environmental trends and events that would be important to the organization during the next decade. Committee members ranked the trends and events relative to the probability of the trends developing into major issues, their impact on United Way, and the time needed for each issue to grow to the point when significant resources would be needed to deal

with it. The staff of the Strategic Institute analyzed the responses, circulated the preliminary results to the Committee for comments, and drafted recommendations for the Committee. The result was a comprehensive forecast of the eight broad trends that would determine the "world of work" in the year 2000.

- *Assessing current and future trends in terms of the affects such changes would have on the organization.* United Way concluded its analysis with more than 50 implications for volunteers and professional employees of United Way. The implications are specific and to the point. Three examples are: (a) forecasted Roman Catholic church closings in inner-city areas will require United Way to expand its human services delivery systems in these areas, (b) forecasted slowing of economic growth will require United Way to carefully target its fund raising campaigns in high-potential markets, and (c) forecasted growth in cable television will require United Way to examine the potential of this communication media as a means of getting its story to more homes. The examples illustrate how social, economic, and technological changes will directly affect the organization's strategic decisions.

How to analyze the identified trends and events is probably the most neglected area of macroenvironmental analysis. It is the least examined because it is not quantitative and is the most subjective. As Dill noted, "The complexity of what we find and the grossness of most of the data that we collect are not consistent with the standards of precision and parsimony that social scientists have come to respect" (25b).

However, respect from the viewpoint of social science, and usefulness from the viewpoint of management practice, can have different sets of standards. While the academic management and public health communities pursue increased methodologic rigor, public health practitioners may wish to begin to develop their skills in using macroenvironmental analysis. There is sufficient evidence of usefulness from the experience of the private sector to warrant public health's interest in these techniques. The goals of both communities will be furthered by the activities of each in the use of macroenvironmental analysis.

Unfortunately, there are not many procedures for incorporating fuzzy issues into the public health planning process. The ones that are available are usually characterized as judgmental, speculative, and conjectural. In recent years, techniques have

been suggested for dealing more effectively with this confusing aspect of macroenvironmental analysis. The most frequently mentioned are the Delphi technique and related methods for the systematic solicitation of expert opinion.

Those who have used Delphi techniques are aware of certain recurring frustrations. Often there is a significant lead time required for circulating materials through the mail and insuring timely returns from the experts. Electronic mail offers a promise to reduce some of the frustrations associated with other methods of collecting expert opinions (26).

Some authors have suggested studying the diffusion of ideas that may eventually influence the environment (27). Based on the product adoption process, the Battelle approach traces the adoption of emerging values throughout society. This process traces ideas from their initial inception through various stages of adoption. Continuous observation and plotting of values and new ideas through this process allows key influences to be identified, monitored, and evaluated in terms of their affects on relevant environmental areas.

Diffusion models have been successfully applied in the health care context for a number of years. Examples include applications to the diffusion of computer automated tomography head and body scanners by Easingwood and coworkers (28) and for oral contraceptives in Thailand (29).

## Conclusions

The first essential issue is related to the importance of macroenvironmental analysis in public health. The second itemizes a series of questions with proposed answers dealing with the process of macroenvironmental analysis, from the initial determination of whether or not it is needed in a particular agency, to some of the aspects of how a macroenvironmental analysis is actually conducted.

Macroenvironmental analysis is important in public health both as an outcome and as a process (30). The data and insights that result from such analysis tell us important things about the climate of decision making in the future. The process demands that we think systematically about what the future holds, our capabilities for responding, and our limitations. As a useful summary, Terry (31) has proposed a simple but effective philosophy of four principles through which the macroenvironmental analysis process can become operational.

- The purpose of the macroenvironmental analysis

process is not to accurately predict the future, but to identify those issues that are most likely to impact on the organization and to help the organization prepare to cope with them when they arise. Surprises are fun in some settings but not when it comes to planning for the future.

- The results of macroenvironmental analysis should be used proactively and to enable the organization to assume something other than a reactive stance toward the environment.

- It is not sufficient for managers merely to understand the plan resulting from macroenvironmental analysis. It is equally critical that they understand the thinking that has led to the development of strategic and tactical key issues. For this reason, it is advantageous for as many managers as possible to take part in macroenvironmental analysis.

- Macroenvironmental analysis should focus the attention of public health managers on what lies outside the health department and allow them to create an organization that can adapt to and learn from those externalities.

Public health managers need to become proficient in applying the techniques of macroenvironmental analysis in order to remain competitive for public funds, and for their organizations to learn, grow, and change in an increasingly complex and challenging environment.

## References .....

1. Institute of Medicine: The future of public health. Division of Health Care Services, Committee for the Study of the Future of Public Health. National Academy Press, Washington, DC, 1988; (a) p. 155.
2. Brown, W.: Information on state planning activities: current status. Summary report, revision, July 5, 1990. Centers for Disease Control, Atlanta, GA.
3. Office of the Assistant Secretary for Health: Promoting health/preventing disease: year 2000 objectives for the nation. Draft for public review and comment. DHHS, Public Health Service. U.S. Government Printing Office, Washington, DC, September 1989.
4. Fahey, L., and Narayanan, V. K.: Macroenvironmental analysis for strategic management. West Publishing Co., St. Paul, MN, 1986; (a) p. 3; (b) p. 4.
5. Office of the Assistant Secretary for Health and the Surgeon General: Healthy people. The Surgeon General's report on health promotion and disease prevention. DHEW Publication No. (PHS) 79-55071. U.S. Government Printing Office, Washington, DC, 1979.
6. Wack, P.: Scenarios: uncharted waters. Harvard Business Rev 63: 73-89, September-October 1985.
7. Wack, P.: Scenarios: shooting the rapids. Harvard Business Rev 63: 139-150, November-December 1985.
8. Perry, J. L., and Rainey, H. G.: The public-private distinction in organization theory: a critique and research

- strategy. Acad Management Rev 13: 182-201 (1988).
9. Sawyer, G.: Business policy and strategic management: planning, strategy, and action. Harcourt Brace Jovanovich, New York, NY, 1989, p. 401.
10. Codman, A. E.: The product of a hospital. Surg Gynecol Obstet 18: 491-496 (1914).
11. Richardson, B. W.: The health of nations: a review of the works of Edwin Chadwick; vol. 2. Longmans, Green, and Co., London, 1887. Cited in Public health administration, edited by J. J. Hanlon and G. E. Pickett. Times Mirror/Mosby Publishers, Inc., St. Louis, MO, 1984, p. 28.
12. Payne, A. M. M.: The basis of preventive medicine. In Preventive medicine, edited by D.W. Clark and B. MacMahon. Little Brown and Co., Boston, MA, 1967, p. 32.
13. Recci, J. V.: One hundred years of gynecology. Blakiston Co., Philadelphia, PA, 1945, pp. 18-19.
14. Donabedian, A.: Evaluating the quality of medical care. Milbank Q 44: 166-206 (1966).
15. O'Leary, D.: The Joint Commission looks to the future. JAMA 258: 951-951, Aug. 21, 1987.
16. Public Health Foundation: Summary of the core program work group recommendations and the Foundation's plan to revise ASTHO reporting system. Washington, DC, 1989.
17. Ginter, P. M., and Duncan, W. J.: Macroenvironmental analysis for strategic management. Long Range Planning. In press.
18. United Way of America: What lies ahead: countdown to the 21st century. Environmental Scan Committee. Alexandria, VA, 1989, pp. xi-xii.
19. Yip, G. S.: Who needs strategic planning? J Business Strategy 6: 30-42 (1985).
20. Emmott, C., and Wiebe, C.: The unraveling safety net. Issues Sci Tech: 51-55, fall 1989.
21. Mesch, A. H.: Developing an effective environmental assessment function. Managerial Planning 32: 17-22 (1984).
22. Naisbett, J., and Aburdene, P.: Megatrends 2000. Morrow Publishing Co., New York, NY, 1990, pp. 5-20.
23. Biendon, R. J.: The public's view of the future of health care. JAMA 259: 3587-3593, June 24, 1988.
24. O'Connell, J. J., and Zimmerman, J. W.: Scanning the international environment. California Management Rev 22: 15-23 (1979).
25. Dill, W. R.: The impact of environment on organizational development. In Concepts and issues in administrative behavior, edited by S. Milick and E. H. Van Ness. Prentice-Hall, Englewood Cliffs, NJ, 1962, (a) pp. 95-96; (b) p. 96.
26. Sproull, L. S.: Using electronic mail for data collection in organizational research. Acad Management J 29: 159-169 (1986).
27. Reinhardt, W. A.: An early warning system for strategic planning. Long Range Planning 17: 25-34 (1984).
28. Easingwood, C. J., Mahajan, V., and Muller, E. W.: A non-uniform influence innovation diffusion model of new product acceptance. Marketing Science 2: 273-296 (1983).
29. Sharif, M. N., and Ramanathan, K.: Binomial innovation diffusion models with dynamic potential adopter population. Technological Forecasting and Social Change 20: 63-87 (1981).
30. Diffenbach, J.: Corporate environmental analysis in large United States corporations. Long Range Planning 16: 107-116 (1983).
31. Terry, P. T.: Mechanisms for environmental scanning. Long Range Planning 10: 2-9 (1977).