among surgeons and among individuals is a fact of life that cannot be assumed away in a mathematical model if it is going to be of any use in solving real-world problems.

It is understood that simplifying assumptions are necessary elements of mathematical or statistical derivations (for example, homoscedasticity in the analysis of variance), but the assumptions must be realistic and the effects of their violations assessable. This cannot be said of Lipscomb's or Wu's formulations. In Wu's paper, an assumption is made for one model that each of two goods can produce only two effects, and that the two effects can be produced only by either of the two goods, and by none other. Further, in Wu's scheme, the drugs and physician services—the two goods—can only increase a patient's comfort and reduce his illness—the two effects. The possibility of any adverse effect is ignored. Maximizing an objective function that precludes any tradeoff considerations between the salutary and the harmful effects of therapeutic agents goes against the very grain of OR techniques.

Similarly, the constraint imposed by Schultze et al. with the objective function [equation (4)] to be maximized is also unrealistic: that health services can only reduce the risk of death, and they never increase it. (Wouldn't that be reassuring to the patient lying on the surgeon's table?) Fortunately, in the cancer study this constraint becomes irrelevant because the use of health services is not a variable of interest.

Although she appears to be aware of the complexities of interrelationships in health services research, Mushkin presents a rather simplistic model for health program evaluation. In Table 1, three hypothetical distributions of patients over five functional states are compared—one before any intervention, one after Intervention 1, and one after Intervention 2. Optimistically, not only is the possibility of patient deaths not entertained, but after each intervention the patients move in one direction only, namely, toward the better health states. This idealized situation would be a decision maker's dream come true, but it can seldom be attained, if at all.

The willingness-to-pay concept is discussed in five papers as a promising approach in health valuation and resource allocation (Dorfman, Clarke, Lipscomb, Fischer, and Mushkin). While there is nothing wrong with the concept, its real-life application, as some authors admit, poses problems because of the uncertainties of returns from investments in health programs and biomedical research. To use something as soft as willingness-to-pay data for decision making involving hard dollars and cents would make little sense. The basic problem with the concept is that it cannot be validated. In market research, individual preferences for particular brands of a product within a price range that have been elicited in a survey can be validated by a re-survey to see if the respondents indeed bought the brands they had said they preferred. The best that can be done with willingness-to-pay data is to obtain what is known as convergent validity, as Ware and Young did. This validity, however, has little meaning because the concept can never be substantiated by observable behaviors on any scale.

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Health Program Evaluation.
Stephen M. Shortell and William C. Richardson. St. Louis: The C.V. Mosby Company, 1978. xvii + 143 pp. $8.95.

The major purpose of this textbook . . . is to provide a systematic

> presentation of the major concepts, methodologies, and issues concerning the evaluation of health services delivery programs at a level appropriate to graduate students in health services administration and planning, public health, dentistry, medicine, nursing, social work, and related professions.

The book under review represents a significant effort by the authors to provide health care professionals with a handbook on program evaluation in the field of health services. Its significance cannot be determined by its length, since the book is less than 150 pages long. The authors state that they are writing primarily from an organizational style and form they found helpful when teaching their graduate students. With the first chapters it becomes readily apparent that the book was indeed designed to be used as a textbook. Almost every chapter is accompanied by a glossary of terms, and examples are given of actual and imagined research problems for the reader to analyze by applying the concepts and information that were introduced in the chapter. One of the book's primary assets is the provision of a bibliography of selected and recommended readings with each chapter. The authors appear to have made a conscientious attempt to include a cross section of readings from a variety of fields, including education and psychology. In general the book is characterized by a simple, almost folksy style of writing that is easy to read and understand.

The authors bridge the fields of program evaluation and health services by drawing on examples from specific health programs, in an attempt to demonstrate the principles and concepts they are presenting. The examples they choose, however, are often only alluded to in the text, and the reader is referred to a secondary source for information concerning a program. The authors make frequent mention of such programs as the "Rand Health Program," PSROs, and EMCROs, with no introductory description or explanation, clearly in the expectation that the reader be well versed in the field of health services prior to undertaking to read this particular book.

Chapter 1 concerns itself primarily with a historical overview of program evaluation and basic terminology. The reader is treated to an interesting, albeit condensed, overview of health care service. In this chapter definitions of terms are often ambiguous, and definitions given in the text are sometimes at variance with those found in the glossary. For example, in the glossary the two terms "implementation assessment" and "process evaluation" appear as synonyms, when a distinction has been made between the two terms in the text. In this chapter the authors often introduce or refer to terms which they have given no antecedent definition—"randomized clinical trials," for example. The neophyte health services practitioner or scholar would have no way of knowing what is meant by a randomized clinical trial. The use of so sophisticated an evaluation concept is ill placed in this chapter, particularly since basic terms such as "reliability" and "validity" are not introduced until several chapters later. The arrangement of information appears to be a problem throughout the book.

Chapter 2 focuses primarily on how to formulate program objectives and how to identify program components. There is a brief and rather superficial treatment of a crucial aspect of program evaluation—the determination and statement of goals and objectives. "Goals" and "objectives" are not distinguished from one another, which is surprising since the distinction is generally made in most evaluation models

and by most evaluators. We find the same pattern of making casual reference to an essential concept in this section as we did in the first section. Here, the reader is presented with the terms "nominal group" and "Delphi Technique" without an explanation of their meaning. Once again, the presumption of previous knowledge of the field leaves the beginning reader far afield. The authors continue in this vein when they state that the "measurability of an objective" is not a primary determiner of its selection. No further mention is made of this crucial point, nor indeed is there an attempt to inform the reader when or how programs should ever have objectives which cannot be effectively measured. Readers who have an advanced base of knowledge of program evaluation may find the answer to this type of question more obvious than the beginner, who may be left with some major misconceptions about evaluation.

Chapters 3 and 4 depart rather sharply from the simple concepts of the other two chapters. Chapter 3 is concerned with research designs and provides a review of the most common types of designs which are generally found in introductory statistics books. Here again, the material does not appear to be addressed to its suggested target audience. The concepts and information are too many and too complex for a reader who is inexperienced in program evaluation, and too simple (or unnecessary) for the more experienced evaluator. A question may be raised about the wisdom of any attempt to teach the concept of threats to internal and external validity, the fallacies of one-shot case studies, and the efficacy of Solomon Four designs in a single chapter in an introductory text on program evaluation. It is certainly true that such material requires in-depth discussion, and mastery by the reader before it can be applied to program evaluation. If the material was meant for the nonacademic health science professional (such as the administrator), it should have been less technically oriented. The research designs mentioned in this chapter are certainly not those usually thought of as popular, useful, or good for health services research.

Chapter 4 provides the reader with a description of the basic terminology, including the subjects of "reliability" and "validity." The chapter appears to be out of proper sequence, if Chapter 3 discussed threats to validity. The reader who has a sufficient base of information can make these sequencing adjustments without confusion, perhaps, but this would not be the case for the beginning program evaluation student.

Health Program Evaluation resembles a set of university course lecture notes more closely than it does a text that can stand on its own merit. The book is weak as a primary introductory textbook to the field of health program evaluation. It suffers from a lack of clarity of ideas, poor sequencing of information, and general organization to meet its instructional purposes. Nevertheless, the book serves as a useful review of important topics of concern to health program evaluation for the more experienced reader. Given the increasing importance of program evaluation to the field of health services research, the book should have a wide readership among persons actively engaged in this field.

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Research in Health Economics.
Richard M. Scheffler (ed.). Greenwich, CT: JAI Press, 1979. ix + 401 pp. $14.50.

This is the first of a projected series of annual compendia of papers in health