Preface

Provision of high quality and affordable health care is one of the greatest challenges facing the nations of the world. Growing elderly populations are straining the budgets of developed countries, such as the United States. Meanwhile, many third world countries face constant hardship in the form of low life expectancy and high infant mortality due to harsh environmental conditions, poor water quality, scarce medical resources, and risky and violent behavior. To solve the twin problems of human health and economic health, health care systems must become more efficient at delivering care and preventing disease.

This book is dedicated to improving the efficiency of health care by improving the scheduling of health care resources (such as doctors, nurses, and medical equipment) to meet patient needs. Building from operations research and industrial engineering, the authors address the complexities of healthcare scheduling in contexts ranging from ambulatory clinics to out-patient procedure centers to surgical theaters. All of the chapters demonstrate the importance of applying resources in accordance to anticipated needs, and making adjustments as needs change. In particular, the authors demonstrate how forecasting, queueing models, stochastic process models, and mathematical programming can improve nurse scheduling, bed management, appointment setting, and many other healthcare processes.

It is our hope that the knowledge and techniques presented in this book will help make quality healthcare accessible to more people. Industrial engineering and operations research are ready to contribute to improving health care around the globe.

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