Healthcare Analytics: From Data to Knowledge to Healthcare Improvement (Wiley Series in Operations Research and Management Science)

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Features of statistical and operational research methods and tools being used to improve the healthcare industry

With a focus on cutting-edge approaches to the quickly growing field of healthcare, *Healthcare Analytics: From Data to Knowledge to Healthcare Improvement* provides an integrated and comprehensive treatment on recent research advancements in data-driven healthcare analytics in an effort to provide more personalized and smarter healthcare services. Emphasizing data and healthcare analytics from an operational management and statistical perspective, the book details how analytical methods and tools can be utilized to enhance healthcare quality and operational efficiency.

Organized into two main sections, *Part I* features biomedical and health informatics and specifically addresses the analytics of genomic and proteomic data; physiological signals from patient-monitoring systems; data uncertainty in clinical laboratory tests; predictive modeling; disease modeling for sepsis; and the design of cyber infrastructures for early prediction of epidemic events. *Part II* focuses on healthcare delivery systems, including system advances for transforming clinic workflow and patient care; macro analysis of patient flow distribution; intensive care units; primary care; demand and resource allocation; mathematical models for predicting patient readmission and postoperative outcome; physician–patient interactions; insurance claims; and the role of social media in healthcare. *Healthcare Analytics: From Data to Knowledge to Healthcare Improvement* also features:

• Contributions from well-known international experts who shed light on new approaches in this growing area

• Discussions on contemporary methods and techniques to address the handling of rich and large-scale healthcare data as well as the overall optimization of healthcare system operations

• Numerous real-world examples and case studies that emphasize the vast potential of statistical and operational research tools and techniques to address the big data environment within the healthcare industry

• Plentiful applications that showcase analytical methods and tools tailored for successful healthcare systems modeling and improvement

The book is an ideal reference for academics and practitioners in operations research, management science, applied mathematics, statistics, business, industrial and systems engineering, healthcare systems, and economics. *Healthcare Analytics: From Data to Knowledge to Healthcare Improvement* is also appropriate for graduate-level courses typically offered within operations research, industrial engineering, business, and public health departments.

HUI YANG, PhD, is Associate Professor in the Harold and Inge Marcus Department of Industrial and Manufacturing Engineering at The Pennsylvania State University. His research interests include sensor-

based modeling and analysis of complex systems for process monitoring/control; system diagnostics/ prognostics; quality improvement; and performance optimization with special focus on nonlinear stochastic dynamics and the resulting chaotic, recurrence, self-organizing behaviors.

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