

REVISED AND UPDATED

PREDICTIVE ANALYTICS

"Mesmerizing & fascinating..."

—*The Seattle Post-Intelligencer*

**AN INTRODUCTION
FOR EVERYONE**



**THE POWER TO PREDICT WHO WILL
CLICK, BUY, LIE, OR DIE**

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WILEY

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<i>How does predicting human behavior combat risk, fortify healthcare, toughen crime fighting, boost sales, and cut costs? Why must a computer learn in order to predict? How can lousy predictions be extremely valuable? What makes data exceptionally exciting? How is data science like porn? Why shouldn't computers be called computers? Why do organizations predict when you will die?</i>	
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<i>How much guts does it take to deploy a predictive model into field operation, and what do you stand to gain? What happens when a man invests his entire life savings into his own predictive stock market trading system?</i>	

Chapter 2

- With Power Comes Responsibility: Hewlett-Packard,
Target, the Cops, and the NSA Deduce Your Secrets (*ethics*) 47

How do we safely harness a predictive machine that can foresee job resignation, pregnancy, and crime? Are civil liberties at risk? Why does one leading health insurance company predict policyholder death? Two extended sidebars reveal: 1) Does the government undertake fraud detection more for its citizens or for self-preservation, and 2) for what compelling purpose does the NSA need your data even if you have no connection to crime whatsoever, and can the agency use machine learning supercomputers to fight terrorism without endangering human rights?

Chapter 3

- The Data Effect: A Glut at the End of the Rainbow (*data*) 103

We are up to our ears in data, but how much can this raw material really tell us? What actually makes it predictive? What are the most bizarre discoveries from data? When we find an interesting insight, why are we often better off not asking why? In what way is bigger data more dangerous? How do we avoid being fooled by random noise and ensure scientific discoveries are trustworthy?

Chapter 4

- The Machine That Learns: A Look inside Chase's
Prediction of Mortgage Risk (*modeling*) 147

What form of risk has the perfect disguise? How does prediction transform risk to opportunity? What should all businesses learn from insurance companies? Why does machine learning require art in addition to science? What kind of predictive model can be understood by everyone? How can we confidently trust a machine's predictions? Why couldn't prediction prevent the global financial crisis?

Chapter 5

- The Ensemble Effect: Netflix, Crowdsourcing, and Supercharging Prediction (*ensembles*) 185

*To crowdsourc*e predictive analytics—outsource it to the public at large—a company launches its strategy, data, and research discoveries into the public spotlight. How can this possibly help the company compete? What key innovation in predictive analytics has crowdsourcing helped develop? Must supercharging predictive precision involve overwhelming complexity, or is there an elegant solution? Is there wisdom in nonhuman crowds?

Chapter 6

- Watson and the Jeopardy! Challenge (*question answering*) 207

How does Watson—IBM’s Jeopardy!-playing computer—work? Why does it need predictive modeling in order to answer questions, and what secret sauce empowers its high performance? How does the iPhone’s Siri compare? Why is human language such a challenge for computers? Is artificial intelligence possible?

Chapter 7

- Persuasion by the Numbers: How Telenor, U.S. Bank, and the Obama Campaign Engineered Influence (*uplift*) 251

What is the scientific key to persuasion? Why does some marketing fiercely backfire? Why is human behavior the wrong thing to predict? What should all businesses learn about persuasion from presidential campaigns? What voter predictions helped Obama win in 2012 more than the detection of swing voters? How could doctors kill fewer patients inadvertently? How is a person like a quantum particle? Riddle: What often happens to you that cannot be perceived and that you can’t even be sure has happened afterward—but that can be predicted in advance?

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Also see the Central Tables (color insert) for a cross-industry compendium of 182 examples of predictive analytics.

This book’s Notes—120 pages of citations and comments pertaining to the chapters above—are available online at www.PredictiveNotes.com.