Business Intelligence and Analytics in Health Care

Educational Briefing for Non-IT Executives

Executive Summary

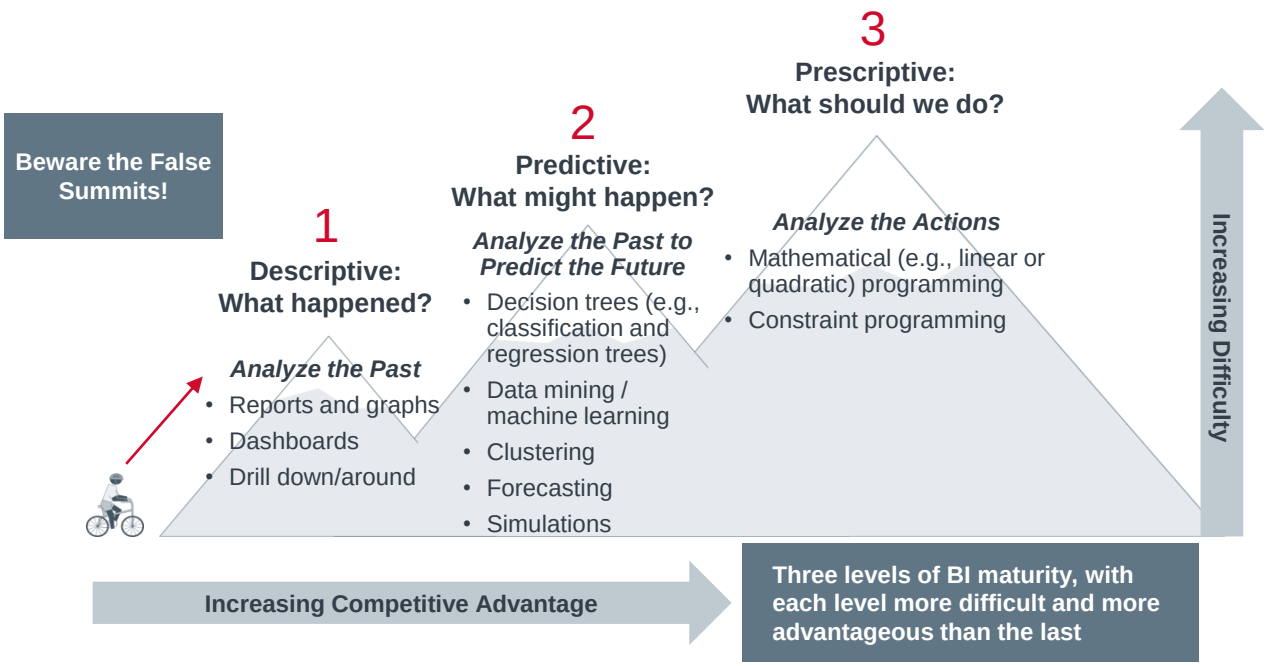
The field of business intelligence (BI) and analytics continues to evolve rapidly. Even as questions remain regarding the details of health care reform, there is broad recognition that BI and analytics are necessary for helping health care organizations adjust to the exponential rise in the availability of data, along with new financial and quality imperatives driven by value-based payment models. Commercial vendors have also responded with increasingly sophisticated products and services in order to help health care organizations with their BI and analytics capabilities.

What is BI?

BI refers to the processes and technologies used to obtain timely, valuable insights into business and clinical data. Integrating, organizing, and analyzing data from a variety of sources can help health care organizations develop more fact-based, data-driven answers to important questions, rather than relying on intuition. Fundamentally, BI and analytics help turn raw data into informed decisions. The time perspective for these insights can be historical, concurrent, or prospective. The processes and technologies utilized by BI to analyze structured data can be segmented into three levels: *descriptive*, *predictive*, and *prescriptive*.

- **Descriptive** analytics analyze the past. Most of what is traditionally referred to as BI falls into this category. This level of BI answers questions such as: *How many readmissions occurred? How did it break down by condition, by facility?*
- **Predictive** analytics predict the future. Predictive analytics are common in the area of claims and risk projection. This level of BI answers questions such as: *How many readmissions can I expect from this population?*
- **Prescriptive** analytics aim to tell us what we should do. These models recommend or directly decide on a specific action to optimize an outcome. Prescriptive analytics have limited deployment in health care today, but have disrupted other industries. Prescriptive analytics can answer questions such as: *Which post-acute facility is likely to deliver the best cost, quality, and experience outcomes for a patient?*

Turning Raw Data into Informed Decisions



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Source: Health Care IT Advisor research and analysis.

How is BI used or applied in health care?

Hospitals and health systems are building their BI infrastructure and services to address a number of evolving market forces, such as population health management, health care consumerism, and risk-based contracting. The three levels of BI can help address a number of factors. For example:

Descriptive BI can enable health care organizations to analyze the cost of care, compare the performance of physicians, and identify the most profitable lines of business. **Predictive BI** can identify patients at risk for long stays, noncompliance with discharge instructions, readmission, and other undesirable outcomes. **Prescriptive BI** can help automate scheduling or inventory levels, or provide cognitive support for physicians when determining diagnostic or therapeutic approaches for patients with multiple chronic conditions.

Why is it important?

Integrating, organizing, and analyzing data from a variety of sources can help organizations develop more fact-based answers rather than relying only on "gut feel" for many important operational or managerial questions such as:

- Which patients might respond best to a particular treatment?
- How can we detect problems with hospital-acquired conditions earlier?
- What could be done to improve performance on individual nursing units?

How does BI affect health care providers and IT leaders?

BI makes data actionable

- The rapid uptake of EHRs has dramatically expanded the universe of data that health systems have for analysis. Additionally, biomedical devices, patient-supplied data, and new diagnostic technologies are bringing new types of data into the system. That raw data alone does not provide value; it needs to be turned into actionable information.

BI ensures greater preparedness for future business changes

- BI can power a health care organization's transformation by modeling future performance and identifying the interventions that can move to meet desired results. BI can provide a thorough understanding of where an organization is today and a focused view of where it can be in the future.

Questions That Hospital Executives Should Ask Themselves

1. Have we assessed our organization's current BI capabilities using Advisory Board's BI Maturity Model?
2. What capabilities do we need to improve to get more value out of our BI program?
3. How can we align BI investments to clinical and business priorities?

Additional Advisory Board research and support available

Report: The Business Intelligence Maturity Model

Report: Big Data in Health Care

Report: Business Intelligence and Analytics in Health Care

Report: Business Intelligence Value: From Alignment to Action

Source: Health Care IT Advisor research and analysis.