# Big data analytics

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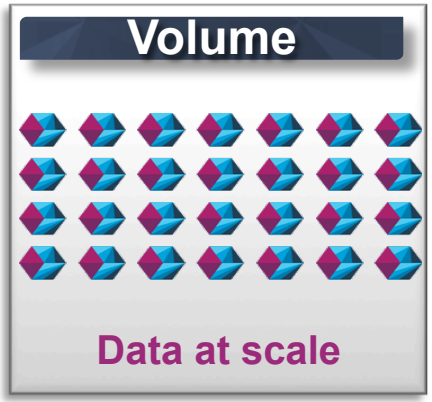
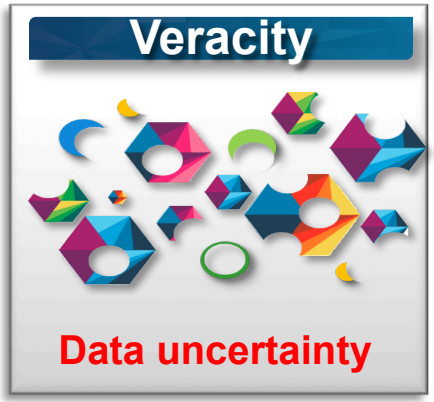
# Big data is all data



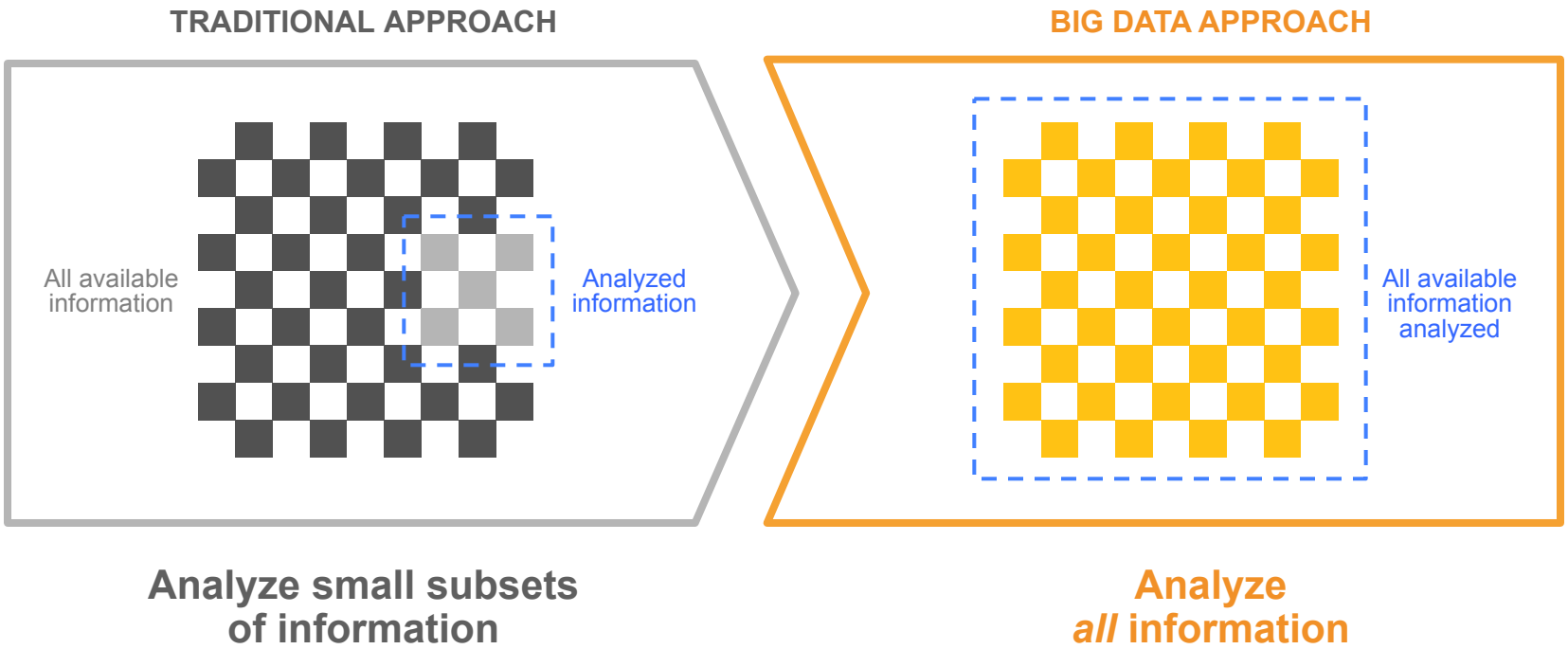


How is big data transforming the way organizations analyze information and generate actionable insights?

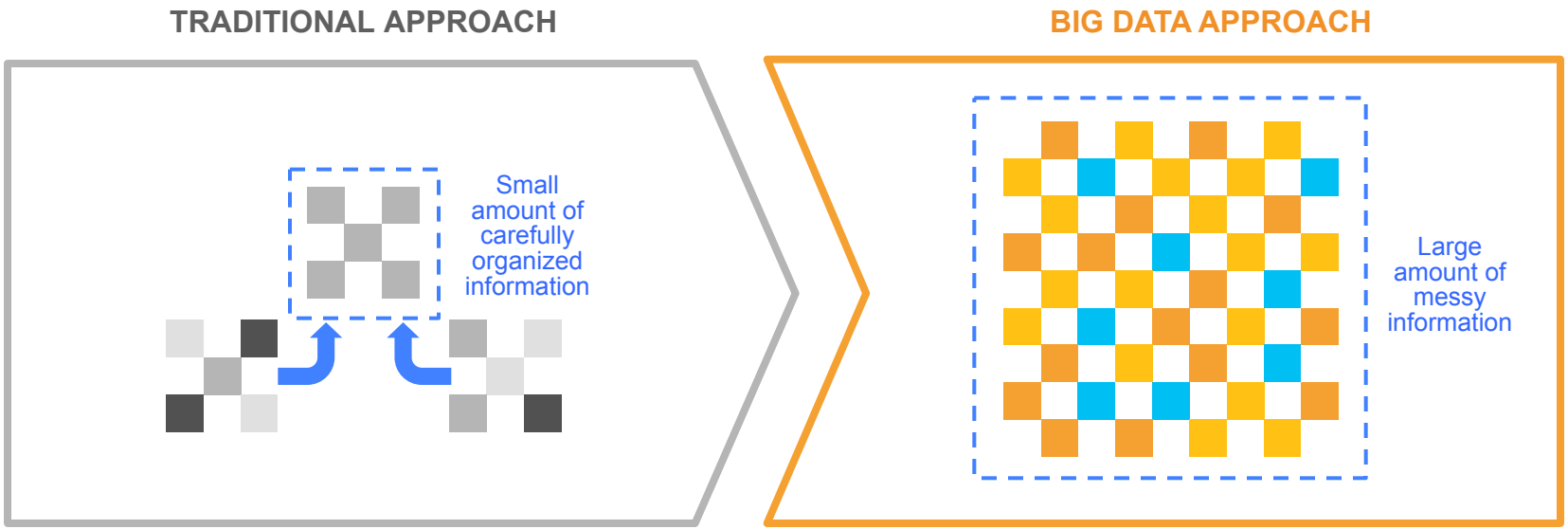
# Paradigm shifts enabled by big data

## Leverage more of the data being captured



# Paradigm shifts enabled by big data

## Reduce effort required to leverage data



# Paradigm shifts enabled by big data

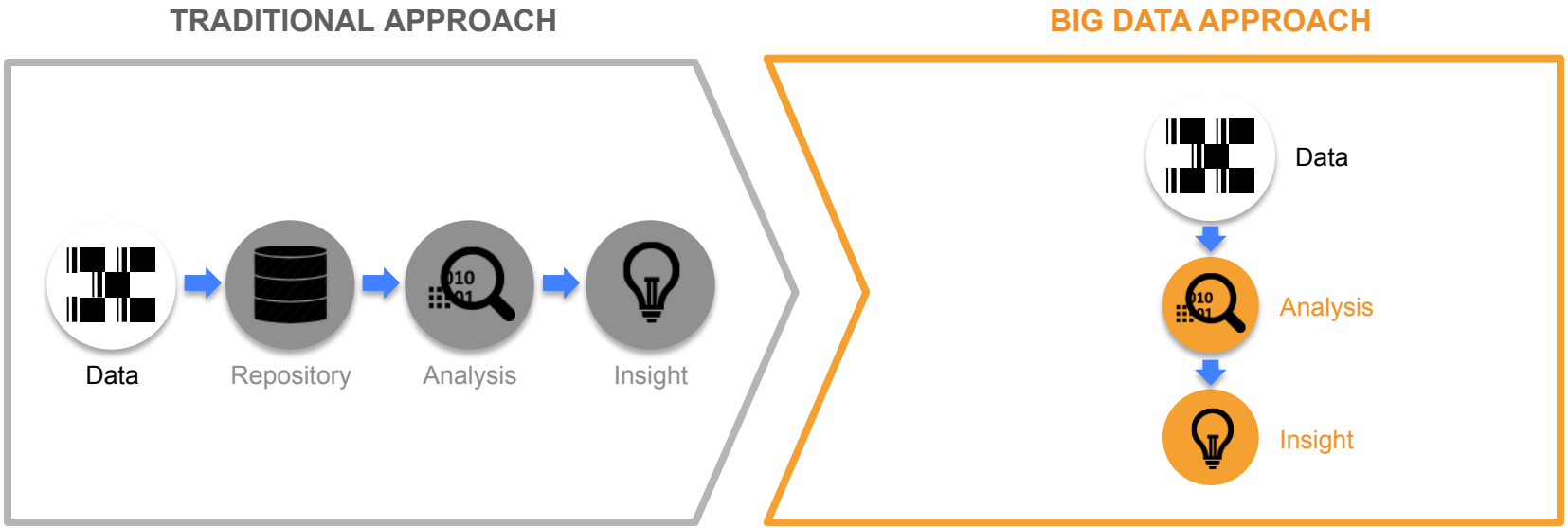
## Data leads the way—and sometimes correlations are good enough


Start with hypothesis and test against selected data

Explore *all* data and identify correlations

# Paradigm shifts enabled by big data

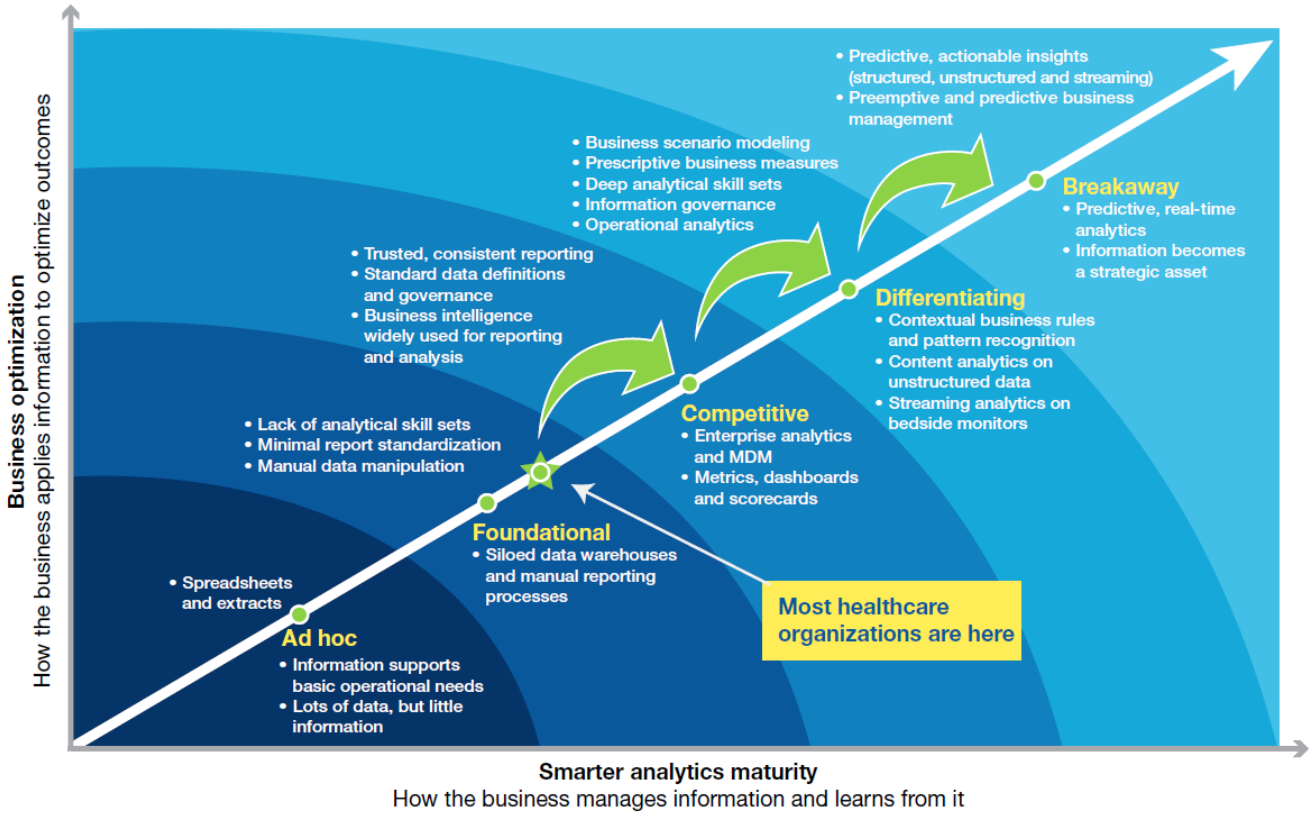
## Leverage data as it is captured




Analyze data *after* it's been processed and landed in a warehouse or mart

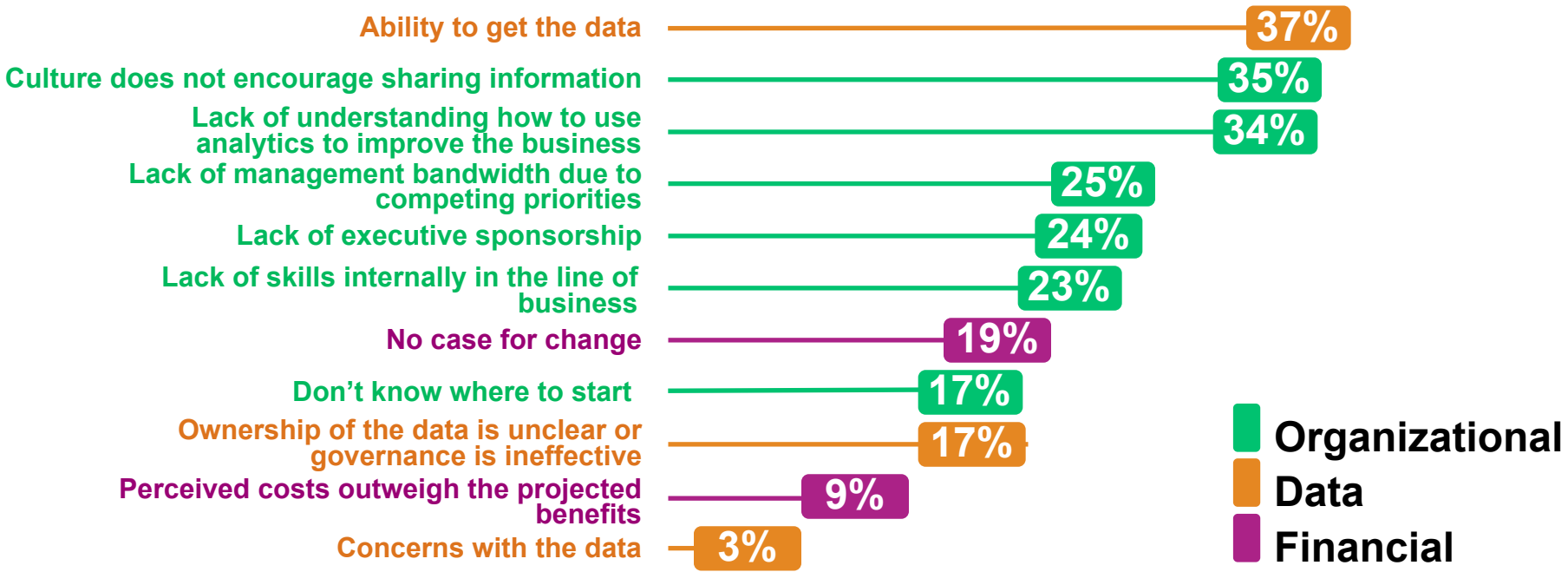
Analyze data *in motion* as it's generated, in real-time

# The analytics maturity model

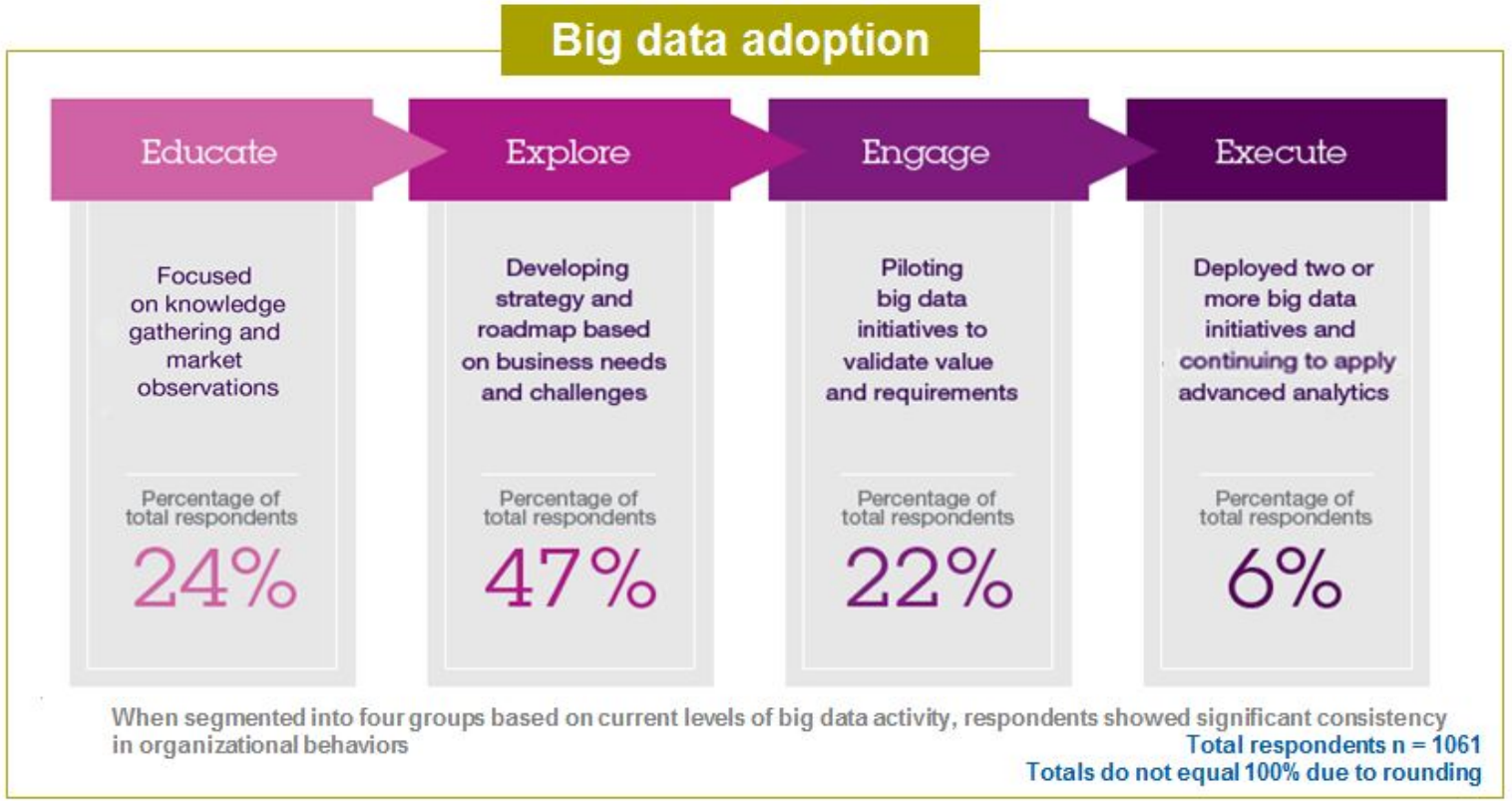


# There are barriers to adoption of analytics

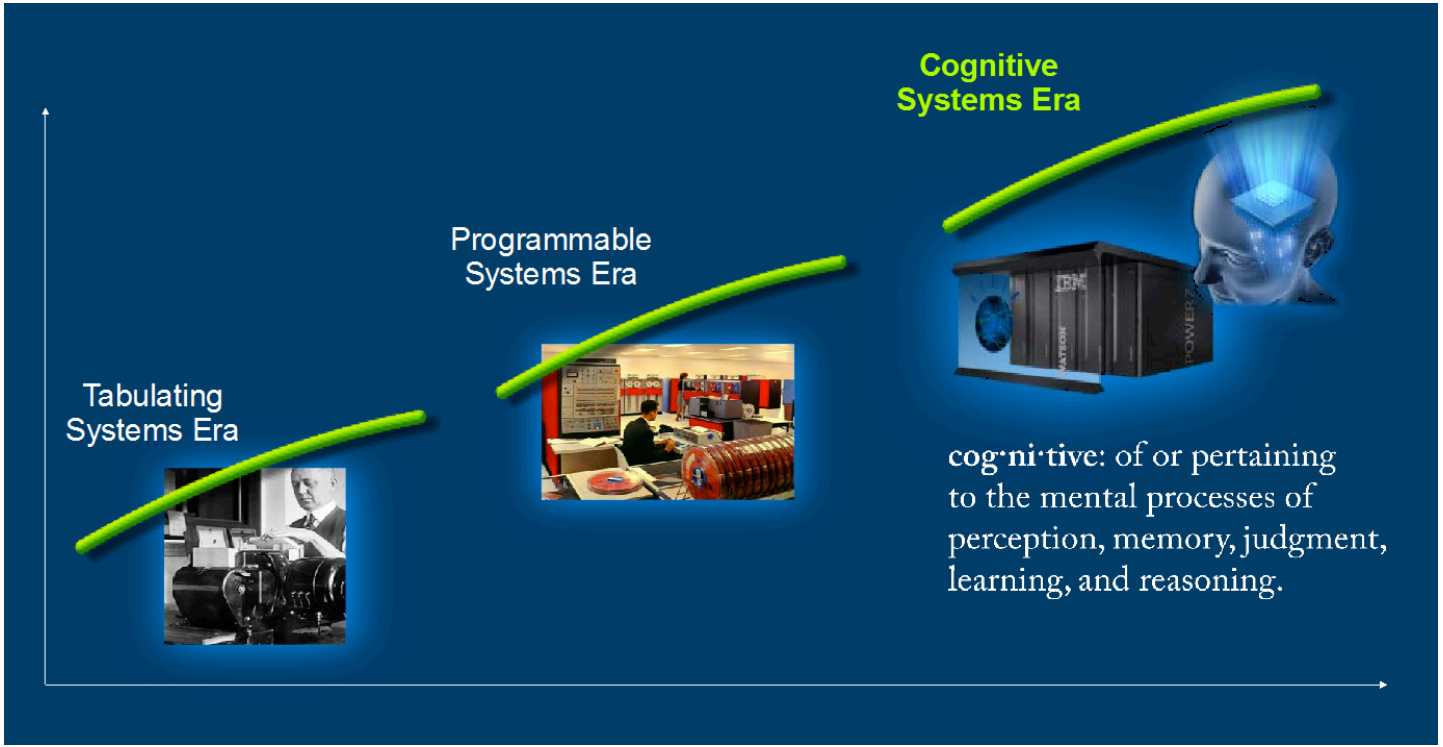
## Primary obstacles to widespread analytics adoption




Source: Analytics: The New Path to Value, a joint MIT Sloan Management Review and IBM Institute of Business Value study.
Copyright © Massachusetts Institute of Technology 2010. Sample size Healthcare n= 116



# We have entered a new era of computing . . .

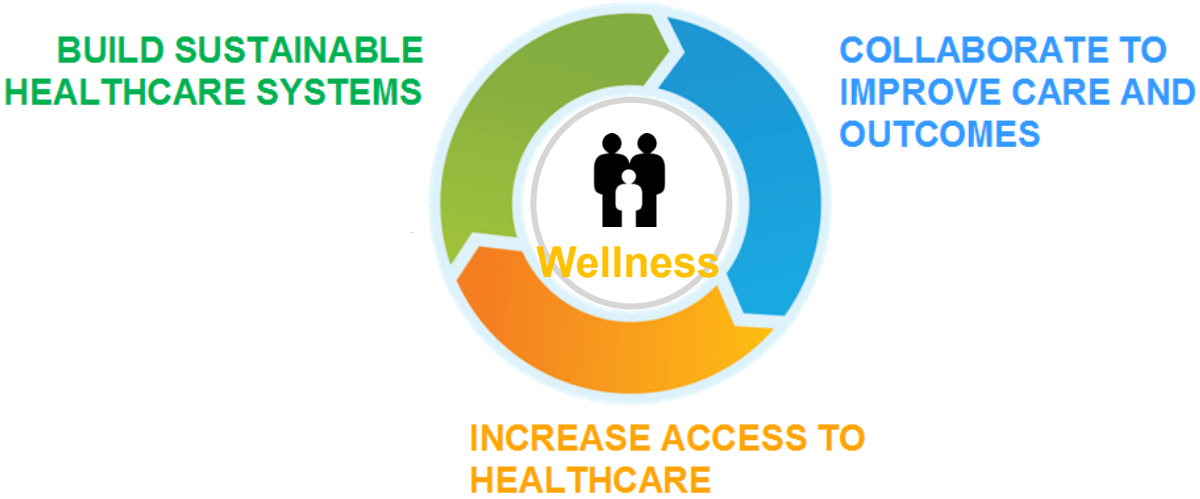



## . . .enabling new opportunities and outcomes

# How is big data transforming healthcare?

# Healthcare leaders face an intensifying mission for transformation

*…Which are driving critical business imperatives*



# Healthcare leaders face an intensifying mission for transformation

## *…That lead directly to requirements for Big Data & Analytics*

*Leverage improved insight to predict future demands and requirements, manage effectiveness*

*Pro-actively recognize patterns of disease progression and take targeted, effective action*

**BUILD SUSTAINABLE HEALTHCARE SYSTEMS**

*Understand total cost of care & areas for efficiencies and process changes*


**COLLABORATE TO IMPROVE CARE AND OUTCOMES**

*Understand effects of treatments on the broader population and individual patients*

*Provide cost transparency and superior care to an ever more demanding public*

**INCREASE ACCESS TO HEALTHCARE**

*Optimize care and service to the citizen, consumer and patient at any point of contact*

# Examples

# Healthcare provider identifies gaps in care with population health analytics to reduce costs and improve outcomes

## Need

- Risk stratify patients utilizing financial (claims), clinical (Epic and other) and other domain data to address gaps in patient care and move from fee-for-service to value based outcomes

## Benefits

- Provide analytics and reporting data for at-risk populations with clinical decision in batch (retrospective) and real time
- Perform predictive modeling to enable proactive interventions
- Provide a secure, encrypted data connection to accept the minimum data transmission necessary to accomplish the request


# BCBS of Massachusetts personalizes web content to educate 3,000,000 members

## Need

- Transform website experience so it adds value beyond a simple check-in or transaction functionality for end users
- Proliferate Business Informatics apps to help identify opportunities for strategic and competitive advantage
- Integrate rolling 7 years (15TB) of clinical, claims and financial data

## Benefits

- Improved member experience with comprehensive view of health data and benefit usage
- Web traffic increased 40%, with registered members increased 26% in 1 year

# Medical research hospital discovering connections between drugs, disease, and genetics to provide better care

Need

- Analytics platform to accelerate breakthrough translational discoveries
- Get beyond simple correlations based on diagnosis codes and SNPs
- Analytics platform to analyze large data sets of concepts vs. concepts, such as lab results, genotypes, medications, diagnosis codes, phenotypes

Benefits

- Connect genetic and phenotypic markers to health outcomes
- Understand genetic basis for disease and drug response to prevent adverse effects
- Query clinical and DNA data from 2.2M patients over 30 years from a single system

www.flickr.com/photos/agecombahia/6283387806

# University of Ontario Institute of Technology (UOIT) uses big data to improve quality of care for neonatal babies

## Need

- Performing real-time analytics using physiological data from neonatal babies
- Continuously correlates data from medical monitors to detect subtle changes and alert hospital staff sooner
- Early warning gives caregivers the ability to proactively deal with complications

## Benefits

- Detecting life threatening conditions 24 hours sooner than symptoms exhibited
- Lower morbidity and improved patient care

## Providing Big Data analytics engine with pre-built advanced analytics to create omni-channel 360 view of customer

Major retailer applies Customer Intelligence Appliance's* advanced analytics against behavioral attributes to track, segment and score customers down to the individual level:

- 10% anticipated improvement in marketing effectiveness
- Identify Highest Value customers out of nearly 100 million
- Target individual customers based on unique preference and histories

*CIA deployed by IBM Business Partner Aginity LLC

Constant Contact

# Integrating email content and text analytics for improving email campaign effectiveness

## Need

- Enrich client customer data with email content to differentiate email marketing services offerings
- Improve clients' email campaign results thru analytics on customer data enriched with email content
- Improve efficiency of aggregating and reporting on operational data

## Benefits

- More immediate and precise campaign performance results improved client satisfaction
- Improved operations efficiency while reducing development resources by 50%;
- Improved predictive indicators of campaign success rates; improved marketing precision and returns

**Behavior pattern analysis driving marketing insight**


# European beverage company uses social media data to uncover key brand influencers and purchase behavior

## Need

- Analyze and understand U.S. spirits brands and purchase behavior to better plan growth strategy for U.S. market
- Cost effectively capture and analyze social network data, blogs and forums to discover the key influencers in the US whiskey and rum markets for better informed marketing decisions

## Benefits

- Analysis revealed a group of smaller entities have a greater influence on the market than their size would have suggested
- Discovered key specialized and non-specialized web sites and forums that had the most influential discussions of specific categories on the Internet, enabling the company to focus its social networking marketing effort


# Enhances inventory management and drives sales growth

## Need

- Help Retail customers effectively capture and manage their down stream demand data  to optimize inventory
- Reduce out-of-stocks
- Improve shelf performance

## Benefits

- Improved inventory planning and forecasting
- Reduced out-of-stocks and overages
- Improved in-store promotions inventory planning , product availability and pricing