Harnessing the Power of Data in Health Care: Data as a Strategic Asset

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Abstract

Harnessing the Power of Data in Health Care: Data as a Strategic Asset

A big-data revolution is underway in health care, driven by an exponential growth in data from the digitization of existing data and the generation of new data. With this data expansion, health care organizations are harnessing the power of data to improve consumer & provider engagement, deliver better health outcomes, and drive down costs.

Many organizations are finding success in using advanced analytics to deliver new value, but it is not all about the analytic models. The growth and complexity of data created by and available to health care organizations requires that data is managed as a strategic asset. This has put a greater emphasis on data governance, data quality and integrated data solutions within health care organizations to ensure they can continue to meet customer expectations, improve service delivery, and enable value creation opportunities through the use of advanced data analytics.

In this presentation we will examine ways in which these rich data assets are being leveraged and what organizations are doing to manage this health care “data tsunami”.

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A big-data revolution is under way in health care

Health care is experiencing exponential growth in data from the digitization of existing data and the generation of new data

<table>
<thead>
<tr>
<th>Year</th>
<th>Data Size</th>
<th>Analysis Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>500 petabytes</td>
<td>50%</td>
</tr>
<tr>
<td>2020</td>
<td>25,000 petabytes</td>
<td>73 days</td>
</tr>
</tbody>
</table>

Worldwide health care data is expected to grow to **50 times** the current total.

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3. US National Library of Medicine. Challenges and Opportunities Facing Medical Education. 2011
Payers and Providers are digitizing their patient records at an increasing rate...

*Electronic Health Records have replaced traditional handwritten notes and filing systems*

In 2009, only **16%** of U.S. hospitals were using an EHR...by 2013, that grew to **80%**

This translates into a cultural shift that will drive and advance data-driven medicine, increase consistency in care and reduce cost of care

...and consumers are generating new data through the use of mobile apps and wearables for personalized health management

**mHealth, freeing health care devices of wires and cords**

In 2015, $2/3$ of Americans favored digital health management over physical

- **79%** Willing to use a wearable device to manage their health
- **45%** Willing to track symptoms via digital device
- **43%** Willing to manage a personal health issue or condition

1) ITN Online. Two-Thirds of Americans in Favor of Digital Personal Health Management. February 2015
The resulting “Data Tsunami” is an opportunity to evolve analytics to aggregate, analyze, and act in powerful ways.

**Analytics 1.0**
- **Descriptive**

**Analytics 2.0**
- **Predictive**

**Analytics 3.0**
- **Perspective**

**What has happened?**

**What will happen?**

**What should I do?**

The health care industry could potentially save **$300 billion** annually by leveraging data and analytics.

Harnessing the power of data

Health care organizations are harnessing the power of big data through analytics to improve patient outcomes, reduce costs, and increase revenue.

**Claims Efficiency**
- Improving performance with cognitive analytics & robotics automation

**Value-Based Care**
- Proactively identify individuals who benefit from preventative care or lifestyle changes

**Participatory Health Care**
- Collect data on medical procedures to help patients determine the care protocol that offers the best value

**Support Health Initiatives**
- Use mHealth to help manage care, locate providers, and improve health

**Predict & Minimize Fraud**
- Advanced analytics for fraud detection and prevention and to check the accuracy and consistency of claims

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Revolutionizing claims processing through robotic automation

Industry direction is to streamline claims processing and applying cognitive solutions to intelligently ingest, process, and route claims more efficiently

### Today’s Challenge
- Paper and manual processes
- Best guess OCR
- Time intensive process

### A Cognitive Solution
- Intelligent OCR
- Robotic Process Automation
- Intelligent Context Aware Routing

### Savings & Efficiencies
1. Increase in automated claims processing
2. Reduction in hours spent adjusting scanned claims
3. Reduction in payment penalties

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### Traditional Approach

*Manual, Inaccurate Methodologies*

1. Organize & Categorize
2. Select Key Information
3. Identify Gaps
4. Search for Information
5. Compile & Review
6. Analyze & Decide
7. Express Decision

### Cognitive Automation

*Automated, Efficient, & Streamlined*

1. Intelligent Ingestion
2. Access Curated Data
3. Knowledge Extraction
4. Probabilistic Inference
5. Continuous Learning
6. Confidence Increase
7. Decision Delivery

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Evidence Based Conclusions in **10 Minutes**
Value-Based Care: Better care, better health, lower costs

Redesigning care delivery models to improve quality care, improve health outcomes, and reduce costs through integrated care management and risk stratification

Affinity & Attribution
Member enrolls in product and attributed to a VBC Provider

Payment Innovation
Providers participate in payment arrangements

Population Health Management
Identify interventions & track Provider performance (e.g., cost & utilization)

Reporting & Analytics
Actionable insights on gaps in patient care, high risk patients, risk for readmissions

Value Based Care Program

What’s next for Analytics:

- COGNITIVE INSIGHTS to build longitudinal member views based on structured and unstructured data
- COGNITIVE ENGAGEMENT to personalize member care plans
- MACHINE LEARNING to train models and optimize programs

8 million + attributed members
78k+ providers enrolled
Reducing fraud, waste and abuse through analytics

Leveraging analytics to identify fraud detection across member, provider, and to check the accuracy and consistency of claims

Data, Analytics, and Concepts Infrastructure

- Integrated Analytics Layer “Data Fabric”
  - Concept Library
  - Concept Management
  - Distributed Processing
  - Real time Monitoring

Concept Development
- Dashboard
- Cluster Analysis
- Text Mining
- Anomaly Detection
- Predictive Model
- Link Analysis

Results Feedback Loop for Concept Updating

Programmatic Interventions & Governance
- Claims / Member / Provider Data

Programmatic Interventions
- Pre Pay
- Post Pay
- Fraud
- Risk Adj

The value: 80% savings from avoidance and 90% reduction in internal efforts
Let’s consider the following about data....

| Incomplete & “Dirty Data” account for 62% of quality issues. | Through 2015, more than 90% of business leaders will view content information as a strategic asset, yet fewer than 10% will quantify its economic value. |
| By 2016, 30% of businesses will have begun directly or indirectly monetizing their information assets. | By 2020, information will be used to reinvent, digitalize or eliminate 80% of business processes and products from a decade earlier. |
| By 2020, 30% of data will be prescribed provenance, business, security and value metadata at the time of its creation. | By 2021, in 75% of large enterprises will have central data organizations seen as a mission-critical function, comparable to IT, business operations, HR and finance. |

1) CEB Tower Group, Operations Quality Council  
2) Gartner, “Why and How to Measure the Value of Your Information Assets”  
3) Gartner, “How a Chief Data Officer Should Drive a Data Quality Program”
What is driving many of our data challenges today?

- Increasing Data Volumes
- Continuous Data Changes
- Complex Data Supply Chains

Active governance & management of data is critical in the healthcare industry in order to identify & mitigate data issues; slowing the degradation of quality.

Leading To

Data “Fragmentation” & Quality Degradation Over Time
Organizations are approaching management of data in various ways, but generally the themes are consistent.

**DATA GOVERNANCE**

- **Enterprise Data Governance Program**
  - Use (Acquire, Analyze, Distribute/Share)
  - Protect (Privacy, Security, Compliance)
  - Manage (Integrate/Quality, Standardize, Store/Retain, Protect)

- **Data Governance Council or Chief Data Office** is accountable for defining & effectuating a data governance strategy & program.

**DATA MANAGEMENT**

- **Data Quality**
- **Master Data Mgmt.**
- **Operational Governance & Mgmt. Processes**

- **Data Catalog/Metadata**

**DATA FABRIC**

- **The Data Fabric** is the central point of integrating and sharing uniform and consistent data across the enterprise.

**Organizations are approaching management of data in various ways, but generally the themes are consistent.**
Data Governance

Data Governance requires top-down management, but activation happens with those that are closest to the data

**Strategic**
(Council, Program Office, Policy)

Data Governance Council or Chief Data office

Data Stakeholders

Data Program Office

Domain Councils & Committees

**Active Management**
(Data Owners, Stewards, Domain Committees)

**Processes & Capabilities**
(Technology, Standards, Guidelines)

**DATA DOMAINS**
- Clinical Domain
- Provider Domain
- Product Domain
- Claims Domain
- Membership Domain
- Analytics Domain

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Data Management

In order to leverage data as an asset, Data Management disciplines need to work in concert with each other.

- Measure and publish Data Quality Health Dashboards
- Monitor the quality of data (consistency, accuracy, etc.)
- Data balancing and controls

- Create searchable catalogs of data resources
- Capture relevant business & technical metadata to enable understanding & use

- Manage master data centrally (Provider, Member, Product/Plan)
- Drive consistency in reference code values

- Policy-based approach
- People, Process, Technology
- Identify & empower data owners and custodians to actively manage data assets
Data Quality Management

- Focus on business pain points and strategic initiatives where value can be realized
- Empower a Data Quality Center of Excellence to drive adoption of tools and practices
- Drive data ownership and accountability through Data Governance policies & roles
- Measure Critical Data Elements (CDEs) & publish via Data Quality Dashboards & Reports

Profile & Assess:
Profile data to identify data accuracy & completeness issues. Assess & research where the failure points or root causes exist.

Measure Data Health:

Monitor & Control:
Implement data balancing checks on data flows between systems. Monitor using control reports & scorecards with well defined data quality metrics (measures, thresholds).

Fix Issues at the Source:
Require ownership of data at source to reduce risk of financial, operational, regulatory, legal, and reputational financial impacts that occur downstream.

• Measure and publish Data Quality Health Dashboards
• Monitor the quality of data (consistency, accuracy, etc.)
• Data balancing and controls
Meta Data Management

Create a searchable catalog of business & technical metadata to enable data discovery

Imagine shopping at a grocery store that has items but no labels

Labels help us find what we need

This applies to our data as well

Imagine shopping at a grocery store that has items but no labels

Labels help us find what we need

This applies to our data as well

Create searchable catalogs of data resources

Capture relevant business & technical metadata to enable understanding & use

Technical metadata describes the structure and format of data

Business Metadata describes the business definitions, rules and context for the data

• Create searchable catalogs of data resources
• Capture relevant business & technical metadata to enable understanding & use

Metadata Management

• Measure and publish Data Quality Health Dashboards
• Monitor the quality of data (consistency, accuracy, etc.)
• Data balancing and control

• Manage master data (Provider, Member, Product/Plan centrally)
• Drive consistency in reference code set values

• Policy-based approach
• People, Process, Technology
• Identify & empower data owners and custodians to actively manage data assets

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Operational Data Governance

Activities relating to the use, management and protection of data. An effective program includes a governing body, defined processes and policies.

- **Policy**
  - Policy-based approach
  - People, Process, Technology
  - Identify & empower data owners and custodians to actively manage data assets

- **People**
  - Defines the responsibilities and rights of key roles in the governance of data
  - Details the accountabilities and decision making authority of data governance roles

- **Policy**
  - Provides structure to implement effective data management
  - Establishes guidelines and principles for enforcing data management standards

- **Process**
  - Defines the detailed data management activities for respective roles ensuring governance policies and standards are complied with across the organization

- **Technology**
  - Administer & manage technologies, vendors and systems involved in the management of data
  - Interfaces between data management tools, end users and associated systems
In large organizations, a member or provider can have interactions (or transactions) with many business areas (and systems) that could result in multiple unrelated records.

- Manage master data centrally (Provider, Member, Product/Plan)
- Drive consistency in reference code values

The unique identifier is the key that tells us that both Jane Doe records belong to the same person and that Jane Doe has a dental and a medical plan.

Master Data Management solutions provide the ability to capture key information about a customer and the identification of a single customer across many business areas and systems.

Source A
Jane Doe
125 Main St
Springfield, MA
617 765-4292
Dental Plan

Source B
Jane J. Doe
125 Bell St
Springfield, MA
617 765-4292
Medical Plan

Unique Identifier = 123
Health care organizations will benefit from establishing a “Data Fabric” in order to:

- **Simplify** the data ecosystem by creating a central point of collection, conformance & distribution that integrates new data types with existing “administrative” data
- **Modernize** using open source and low cost scalable technologies
- **Govern** data and its quality, focusing on points of data creation, collection, conformance and consumption

The Data Fabric becomes the central point of integrating and sharing uniform and consistent data across the enterprise.
In the age of data & digital disruption...

Organizations need to develop new capabilities that harness the power of data while preparing to evolve existing capabilities.

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<thead>
<tr>
<th>Traditional Focus</th>
<th>The New Data World</th>
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<tbody>
<tr>
<td><strong>Retrospective Analysis</strong></td>
<td><strong>Insights &amp; Foresight</strong></td>
</tr>
<tr>
<td>Use of descriptive analytics &amp; reporting to described “what happened”</td>
<td>Advanced Analytics for “what will happen” (predictive) &amp; “what should I do” (perspective)</td>
</tr>
<tr>
<td><strong>Batch Data Processing</strong></td>
<td><strong>Real-time insights &amp; decisions</strong></td>
</tr>
<tr>
<td>Daily, weekly and monthly processing cycles tied to rigid business processes</td>
<td>Ingestion and processing of data pipelines to enable quicker and more relevant insights</td>
</tr>
<tr>
<td><strong>Functional Data Silos</strong></td>
<td><strong>Integrated Data Assets</strong></td>
</tr>
<tr>
<td>Data imbedded in tightly coupled functional applications</td>
<td>Integrated “data fabric” to enable enterprise grade data operations &amp; analytics</td>
</tr>
<tr>
<td><strong>Passive Data Monitoring</strong></td>
<td><strong>Active data governance</strong></td>
</tr>
<tr>
<td>Management of data at rest without monitoring end to end data lifecycle</td>
<td>Proactive data management and data quality controls for use and distribution - ‘Fit for Purpose’</td>
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Change is NOT a choice but an imperative; organization must innovate and deliver solutions, faster, to meet market demands. This requires a fundamental shift in how we manage these strategic data assets.
Christopher Joyce
Vice President Enterprise Data Solutions
Anthem, Inc.

Christopher Joyce is vice president of enterprise data solution at Anthem, Inc. He oversees enterprise-wide data platforms including data warehouse strategy and technical development, semantic data layer integration and design, data management and development, advanced analytics platforms and business intelligence capabilities.

Christopher is a leader in the technology team that is charged with providing one of the industry's most comprehensive data analytic platforms by building the engine that will help deliver improved and more relevant health care outcomes. Christopher’s team is constructing a fully integrated enterprise data fabric and analytic capability, built on a best-in-class data infrastructure, to support the operational, advanced analytics and reporting needs for Anthem.

Prior to joining Anthem in May 2014, Christopher served as managing director of Enterprise Data for TIAA-CREF, where he was responsible for the delivery and operations of the firm’s data assets and capabilities. In this role, he focused on strategic leadership for the company’s data transformation program and execution of its data strategy. He also played a key role in delivering the organization’s data governance and management practices.

Christopher's career spans almost 25 years in information technology management, including architecture, governance, analytic platform design & development, and operations. He has held various roles at several companies including JP Morgan, Bear, Stearns & Co. and AT&T. As a transformational leader, Christopher has led global teams focused on collaboration and delivering business value through innovative technology solutions and architecture-based initiatives.

Christopher has a Bachelor of Science in Management Information Systems from Penn State University and a Master of Business Administration from Seton Hall University. He also serves on the Board of Advisors for the New Jersey Institute of Technology (NJIT) College of Computing Sciences.