THE THIRD NATIONAL PREDICTIVE MODELING SUMMIT

Next Generation Data Sources to Improve Your Predictive Models

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Agenda

• Introductions and Objectives
• Predictive Modeling for the Healthcare Industry
• External Data for Healthcare 101
• Case Studies
• External Data - How to Get Started
• About the Speakers
Introduction and Objectives
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Predictive Modeling in healthcare began to solve a widely known problem….that 20% of the population is responsible for 80% of the cost. However, with healthcare costs continuing to rise and a shift towards consumerism and proposed policy changes, the quest continues for innovative applications of predictive modeling for the healthcare industry. New and robust external data sources hold promise of improving the segmentation power of traditional healthcare predictive modeling applications and paving the way for new and innovative ways predictive modeling is applied in the healthcare industry. This session will provide attendees with:

• how predictive modeling is currently used today in the healthcare industry
• the ABCs of external data and its application for healthcare predictive modeling
• real world examples of external data and predictive modeling in action
• predictive modeling and external data as a broader information management strategy
Predictive Modeling for the Healthcare Industry
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• a review of current trends and outlook of the healthcare industry
• impact of proposed healthcare policy changes
• how predictive modeling is currently used today in the healthcare industry
• the ABCs of external data and its application for healthcare predictive modeling
• real world examples of external data and predictive modeling in action
• predictive modeling and external data as a broader information management strategy
Predictive Modeling – A Quick Overview

Predictive Modeling applies mathematical and statistical techniques to statistically predict future outcomes and improves the overall ability to segment a population on the basis of a future probability or outcome.

**Predictive Models**
- Limits subjective reasoning from healthcare operations and risk assessment through use of mathematical and statistical techniques
- Leverages internal and external data to predict risk of individual members
- Creates opportunities to enhance traditional underwriting and rate setting for groups
- Improves insights into the needs and wants of individual members and patients
- Can allow for increased amount of “no touch” and “low touch” members
- Provides objective guidance for more efficient and consistent medical management applications
- Opens the door for new insights into risk characteristics of members and patients
- The predictive model itself only delivers the relative risk index for a member, patient or group
- The rest of the value to be obtained from the predictive model comes from careful implementation of model results into business processes and systems

**Sample Lift Curve**
- Member is likely to dis-enroll from health plan
- Member is likely to stay enrolled with the health plan

The model supports key business decisions and yields increased efficiency across the full spectrum of risk.

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Predictive Modeling for the Healthcare Industry

Predictive Modeling for the Healthcare Industry – Data Mining vs. Predictive Modeling

• While the terms are often interchanged, there is a difference between data mining and predictive modeling

• Data Mining is knowledge discovery in large databases and data warehouses [KDD]
  – Search for novel patterns in industrial databases that have business value
  – Health care utilization trends by type of service is an example of KDD

• Modern Predictive Modeling
  – The process where historical data patterns are synthesized to predict a future outcome that is actionable
  – Add tools such as CART, MARS, neural networks, Generalized Additive Models to your arsenal
  – Even if these aren’t used to build final models, they are excellent tools for data exploration, heuristics, and creating “benchmark” models
  – Emphasis on out-of-sample validation and model validation techniques
  – Predicting future healthcare costs are an example of predictive modeling

• Benefits are not realized on statistics and analysis alone. Need to integrate results within IT infrastructure and business process to realize benefits

Part of the ever-evolving science of underwriting, actuarial and medical management, predictive analytics is a scientifically-validated tool:

- more meaningful insight into individual member risk characteristics
- improved ability to distinguish low risk and high risk members
- pricing accuracy for products for groups and individuals
- Informed business decisions driven by data and science

Evolution of Predictive Analytics

- IBNR
- Clinical Groupers
- Actuarial and Pricing Applications
- New External Data Sources
- Innovative Member Centric and Underwriting Applications
Predictive Modeling for the Healthcare Industry

Predictive Modeling for the Healthcare Industry – Applications and Emerging Trends

- Rate Setting
  - IBNR
  - Actuarial Rate Setting by type of service

- Cost and Disease Management
  - Predicting future per member per month cost
  - Identification of high cost high risk members for DM Programs

- Member and Product Services
  - Predicting member dis-enrollment
  - Product design and product offerings (i.e. HSA)
  - Member Loyalty Rewards Program target marketing
  - Health education and target marketing

- Underwriting and Acquisition
  - Individual product underwriting
  - Group underwriting (51 to 200 members)
  - Uninsured population targeting

- Sales Force Effectiveness
  - New product design and group alignment
  - Supplemental products and services for existing groups
Predictive Modeling for the Healthcare Industry – What Market Leaders are Doing

As it turns out, lowering the cost of hypertension drugs did not increase compliance or lower treatment costs. "What’s true for asthma and diabetes may not be true for hypertension," says Mahoney. Predictive modeling "is going to be the key to helping us understand all that."

But in terms of using predictive modeling as an underwriting tool, "it's very early on in the process," he says. Excellus now "is putting in place the processes and analysis that will tell us whether it's going to give us better data, and will tell us whether or not it's going to improve our workflow."

We use the same program as our nurses use to decide who they're going to case manage," she says. Sometimes, LifeWise goes a step further in making underwriting decisions, actually calling the nurse case manager to see if current interventions under way with the patient are likely to lower costs beyond what Impact Pro has projected.
Predictive Modeling for the Healthcare Industry – More Common than Ever

- **Technology**
  - Cost of storage and computing power has decreased exponentially

- **Data**
  - Third-party data is becoming increasingly available
  - Companies are learning to do more with their internal data
  - External data partners are pushing the envelope for new data sources and aggregation of information about individuals

- **Software and algorithms**
  - Innovative analytic ideas continually coming from statistics, economics, machine learning, marketing, …
  - Advanced analytic tools have become widely available.
Predictive Modeling for the Healthcare Industry

Deloitte Consulting’s Predictive Modeling Framework

Innovative Data Sources

Traditional internal data sources

Non-traditional external data sources

Advanced Data Analytics

Deloitte Segmentation Analysis

Predictive Analytics

Data Aggregation & Data Cleansing

Evaluate and Create Variables

Develop Predictive Models

Develop Reason Codes & Business Rules

Business Implementation

Resulting Programs:
- Underwriting
- Actuarial and Rate Setting
- Medical Management
- Target Marketing
- Health Education
- Sales Effectiveness
- Market Expansion and Product Design
- Provider Reimbursement
- Plan Assignment and Verification

Non-traditional data sources unleash new risk characteristics into the predictive modeling process

Building and deploying predictive models requires a specialized combination of skills covering data management, data cleansing, data mart construction, actuarial and statistical analysis, data mining and modeling, and insurance operational and business processing and technology

Predictive modeling results are used to align underwriting, pricing, rate setting, medical management, sales effectiveness, marketing and provider reimbursement processes

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Predictive Modeling for the Healthcare Industry

The Power of External Data in the Modeling Process

PMPM Cost Predictive Model Lift Curve Comparison
- with and without external data

Without External Data
With External Data

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Predictive Modeling for the Healthcare Industry

Problem Definition
- Identify the segments where predictive modeling will be applied for underwriting (i.e., mid-size groups 50 to 500, associations, etc)
- Define the pool of risk characteristics that will be derived from internal and external data sources

Model Build
- Procure external data archives from external data partners and enrich internal data with external sources
- Define the target variable and develop the predictive model design specifications
- Process and cleanse data, develop independent variables, test variables and develop final predictive models

Model Implementation
- Develop technical infrastructure to apply predictive model attributes in the underwriting process including external data matching
- Develop underwriting rules and actions derived from predictive model scores. Modify front-end applications to display predictive model information
- Develop training and communications plan. Develop roll-out strategy and performance metrics to measure benefits
Predictive Modeling for the Healthcare Industry – Holistic Approach to Assessing Risk

- Territorial characteristics, characteristics of the group or industry
- Point-of-enrollment, access to care and other external factors are effective in segmenting Medicaid populations

- Understanding the needs and wants of individuals through household level lifestyle characteristics (i.e. – hobbies, healthy living, etc.)
- How individuals lead their lifestyle play a major role in their overall clinical risk

- Claims, Pharmacy, Membership and Provider data is used to analyze historical utilization patterns and predict future costs on a PMPM basis
- Identification of cost drivers for high risk members
- Ignores segmentation of healthy members

- Race, Ethnicity, Family Size in addition to Age and Sex can be used to further segment a health plan’s population
- Demographic and Socio-economic characteristics can be used to further enhance traditional utilization based predictive models
Predictive Modeling for the Healthcare Industry

Predictive Modeling for the Healthcare Industry – More than just Underwriting

Example Member Insights

**“Recent Graduate”**
- Health Status: Health, Active Lifestyle, Low Risk
- Characteristics: Highly educated, environmentally conscious

**Nichole, 24**

**“Kids & Cul-de-Sacs”**
- Health Status: Varies, but overall Health Conscious
- Characteristics: Child-centered products and services

**The Johnsons**

**“Mover & Shakers”**
- Health Status: High Cholesterol, High Stress, Insomnia
- Characteristics: Business bent, has a home office, travels extensively

**David, 38**

**“Golden Years”**
- Health Status: Overweight, diabetic, low physical activity
- Characteristics: Community ties / involvement, Values family

**Mary, 64**

**Example Member Actions**

**Loyalty Track**
- Show low cost members the value of the health plan to increase loyalty

**Health Response Track**
- Engage high cost / high risk members in prevention and condition management activities

**Targeted Marketing**
- Fitness Club Memberships and Discounts
- Child Health Education Programs
- Outdoors Clubs

**Targeted Marketing**
- Lifestyle Management Programs
- Personal Health Records
- Disease Management Programs

Experian

A world of insight
Predictive Modeling for the Healthcare Industry

The Shift Towards Consumerism

With the employer role changed, new roles for health plans and others are “filling the void” by developing relationships with the end consumers.

Infomediaries
Building brand as trusted advisors and owning consumer data
e.g. Web MD, Revolution Health

New Products from Traditional Competitors
Successfully targeting & building relationships with specific market segments
e.g. Tonik, Humana

Retail
Established brands & direct consumer relationship
e.g. Wal-Mart, Minute Clinic

Financial Services
Bringing advanced direct-to-consumer marketing capabilities to healthcare
e.g. Mastercard, BankFirst

Health Plan

Consumer

Deloitte.

Source: Bureau of Economic Analysis

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# Predictive Modeling for the Healthcare Industry

## Industry Trends Driving the Need for Predictive Modeling

<table>
<thead>
<tr>
<th>Top Issues</th>
<th>Industry Impact</th>
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| **Economic Crisis and Health Insurance Impact** | ▪ Health insurance costs and healthcare costs continue to rise forcing more and more individuals out of the market  
▪ There is a direct correlation with the economic crisis and unemployment with increases in Medicaid enrollment and increases in the percentage of the uninsured  
▪ The consequences of rising healthcare costs are significant as more and more Americans are faced with making tough healthcare choices based on financial considerations |
| **Demographic Shift**           | ▪ US population is aging, more and more elderly need extended health care benefits  
▪ The number of uninsured continues to rise. These individuals and families represent non-traditional demographic groups that require healthcare services  
▪ US workforce demographics are shifting. Lifestyle, needs and wants are different for today’s workforce |
| **Shift Towards Consumerism**   | ▪ More and more people are opting out of traditional healthcare products and into consumer driven healthcare products and services  
▪ The primary relationship for health plans is shifting from the employer to the consumer  
▪ In a consumer driven healthcare market, health plans must improve the understanding of its customers |
| **Proposed Reform**             | ▪ The proposed healthcare reform will have a great impact on how health insurance companies segment the population and differentiate products and customers for different customer groups  
▪ The cost of the proposed healthcare reform will be a major issue facing the entire industry |
External Data for Healthcare 101
Traditional predictive modeling applications for the healthcare industry relied primarily on internal claims, membership and provider data. While these data sources proved effective in medical management, actuarial and underwriting predictive modeling applications they were based primarily on clinical risk and cost drivers and ignored socio-economic, lifestyle, demographic, financial and geographic characteristics that contribute to individual member and group risk. This section will examine how external data can be used to enhance traditional predictive modeling applications as well as pave the way for new applications of predictive modeling. Discussion topics include…..

- types of external data and their application for the healthcare industry
- closer look at certain external data sources and their business value
Types of External Data and their Application

**Regulated Data**
- Consumer Credit Data
- Commercial Credit Data
- List others or use correct terminology

**Non-Regulated or Marketing Data**
- Mosaic
- List Source
- List others or use correct terminology

**PM Applications**
- Patient Payment Risk Assessment at Point of Registration
- Financial Assistance Screening

**PM Applications**
- Medical Management
- Member Retention
- Product Design and Rate Setting
- Target Marketing
- Group Underwriting
Six Classes of information

- 425 million vehicles in U.S. & Canada
- Title, registration, mileage and key events

- 240 million consumers
- 113 million households
- Individual credit history
- Summarized credit history
- 1K demographic attributes
- 3.2 million births annually
- 16 million moves annually
- 20 million new homeowners
- 3,200 public and proprietary sources
- 100 million subscriptions
- 650+ psychographics

- 25 million Internet users interacting with one million Web sites
- 15 million email addresses

- 27 million active companies – primarily small and mid-sized businesses
- Greater than 100 million trade lines
- 48 million public records
- 10.2 million collection experiences
- 15 million tax identification numbers
- 48 million SIC (industry) codes

- Syndicated (primary) research data: 30,000 consumers annually; 60,000 data variables
- 35 million double opt-in consumer panel 8,000 brands; 450 product categories
- Media viewer-ship across all media

- 3.6 million retail businesses
- 110 million catalog buyers
- 61 million magazine subscriptions
Examples of data elements

- Vehicle tax, license, registration information
- Vehicle history – ownership & repair
- New versus used vehicle sales data

- Total open balance revolving accts
- Total high credit all accts
- Highest credit limit all accts
- Presence of bankruptcy
- Age, gender, education
- Estimated income, occupation
- Marital Status
- Presence of children
- Ethnicity
- Business owner

- Years in business
- Number of employees
- Primary/Secondary SIC – industries served
- Sole Prop/LLC/LLP/Corporation
- Commercial credit score

- Geographies with above average usage of a given brand
- Top radio, cable, internet, newspaper format by geography based on target audience

- Top N websites visiting by category – shopping, lifestyle, gambling etc.
- % market share of visitors by like websites

- Self reported ailments & medications
- Smoker and tobacco related
- Health & fitness interests
Sample Use Cases

- Target acquisition marketing - Business group healthcare plans
- Doctor/Dentist/Group Provider - profiling and risk assessment
- Co-marketing/alliance partnerships with health related product companies

- Patient payment risk assessment
- Financial Assistance screening
- Collections management
- Consumer product design & rate setting
- Medical/Disease Management
- Lifestyle Management
- Member contact info updating
- Member/patient profiling
- New member target marketing
- Existing member retention marketing

- Online member ad placement
- Search keyword optimization
- Online audience profiling

- Media planning for target marketing – print, TV, online
- OTC drug brand loyalty

- Prescription Drug – consumer usage profiles
The Value of External Data in the Predictive Modeling Process

Innovative data sources, unique variables derived from traditional data sources are key to developing robust analytic solutions that help health plans segment their population across the full spectrum of risk and improve the quality and reduce the cost of care delivered for Employer Groups.

- Concentration of cardiologists within a five mile radius
- Distance from the member’s home to their primary care physician
- Average days lapse between filled scripts
- Exercise equipment purchase within the past twelve months
- Active gym membership
- Body Mass Index and Family Disease History (EMR derived data)
- Household Size and Income
- Graduate School Degree
- Number of Cars in Household
- Charity Care Probability Index
- Patient’s Ability to Pay Index
The Importance of Demographic and Lifestyle Data

- U.S. population is changing
- The make-up of the traditional healthcare consumer has and will change significantly
- Demographic characteristics of the uninsured are significantly different than traditional employer sponsored group consumer
- Lifestyle characteristics play an equal role in determining clinical risk as traditional clinical risk characteristics
A Closer Look at External Data for Healthcare – Mosaic Segmentation System

- Classifies over 113 million American households and associated neighbourhoods and individuals into 12 groups and 60 distinct types
- Provides complete understanding of the demographic, socio-economic, lifestyle, behavior and cultural diversity of the US population
- Mosaic provides insight to:
  - Understand who your members are, who they are not
  - Produce better targeted product communication
  - Quantify potential at a local, regional, national level
  - Optimize market planning and allocation of resources
- For healthcare predictive modelling applications, Mosaic can be used for:
  - Target Marketing Applications – Acquisition & Retention
  - Identification of uninsured populations
  - Medical Management Applications
  - Patient’s Ability to Pay
  - Health Education and Health Campaigns
A Closer Look at External Data for Healthcare – Mosaic Segmentation System

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- Captured influences that have changed the American ethnic landscape
  - Understanding changes in ethnicity - e.g. Hispanic growth
  - Incorporated Experian’s exclusive Ethnic Insight to elevate targeting effectiveness – going beyond Census data
Now that we have presented a variety of topics on how traditional applications can be enhanced and new applications can be developed by leveraging external data in the predictive modeling process, we turn our attention to examining practical applications of predictive models. Through actual case studies we will examine how organizations have realized business value through the predictive modeling applications that have been enhanced through external data. Discussion topics include:

- healthcare provider predictive modeling applications case studies
- health plan predictive modeling applications case studies
Predictive Modeling Application – Patient Account Segmentation

**Business Problem**

Historically healthcare providers had a difficult time assessing a patient’s eligibility for financial assistance and hospital charity programs at the time of registration. This takes on even greater significance with the growing percentage of the uninsured population and socio-economic and demographic challenges associated with providing quality care in certain geographic locations. Hospitals and integrated healthcare delivery systems need an effective and accurate way to determine a patient’s eligibility for government sponsored health insurance and other assistance.

**Business Solution**

Develop and deploy an analytics solution that leverages external regulated and non-regulated data that can be used to determine a patient’s eligibility for government sponsored health insurance or charity care at the point of registration. By integrating the underlying intelligence derived from analytics with patient registration systems, providers can determine if a patient needs financial assistance and if so what programs they can be enrolled in. The end result is an efficient patient registration and account management process that results in an improved experience for the patient and payments for the provider’s services.
The model produces an FPL%, which is an estimate of the patient’s household income as compared to the Federal Poverty Level.

**Predictive Model Equation**

\[
estIncome = w_1 \times mortBalance + w_2 \times ccAvailCredit + \ldots
\]

\[
FPL\% = \frac{estIncome}{FPL(\text{householdSize})}
\]

- **FPL% <= 200% = Probable**
- **FPL% <= 400% = Review**
- **FPL% > 400% = Unlikely**
Financial Assistance Screening – Medicaid Case Study

University of Arkansas

- Largest research institution in Arkansas
- 17% of state residents are uninsured
- Many patients unaware that assistance programs exist
- Patients with income < 200% FPL are eligible

Results

- Approval by hospital is accepted by state (uses same rules)
- Medicaid forms pre-populated and printed
- Reduction in effort and time needed to qualify patients
- More patients qualified for state Medicaid
- Ineligible patients automatically put into charity workflow
Financial Assistance Screening – Charity Care Case Study

**Novant Health System**
- Not-for-profit integrated healthcare system in North Carolina
- Rising bad debt, unable to efficiently identify charity care accounts
- Many deserving patients unable or unwilling to provide documentation

**Results**
- Income model identifies patients that are likely to qualify and determines discount
- Patients meeting criteria are automatically enrolled
- Charity enrollment process time decreased from 20 to 7 minutes
- Number of qualified charity cases tripled
- Reduced bad-debt by 50%
Case Studies

Predictive Modeling Application – Reducing Involuntary Medicaid Dis-enrollment

Business Problem

Government sponsored health insurance programs such as Medicaid, CHIP, and Family Health Plus/Adult Basic are designed to provide coverage for vital health care services to some of the neediest people. For these programs to achieve positive health outcomes for recipients, government agencies must help recipients maintain continuity of care as a pre-cursor to promoting quality of care. As a result of various socio-economic and demographic factors combined with the eligibility verification process itself (recertification), many government sponsored health insurance programs are faced with annual dis-enrollment rates of 15 – 25%.

Business Solution

Develop and deploy a data mining solution that can be used to predict the likelihood that a Medicaid recipient will dis-enroll at some point in the future. State health departments or the Department of Insurance can used the predictive modeling results to proactively identify the recipients with the greatest likelihood of dis-enrolling in the future and implement the appropriate outreach activities designed to promote the value of health insurance and engagement in preventive health in an effort to ensure that the recipient will maintain continuous coverage without a lapse. Staff resources and outreach spend can be focused on the segments of the population with the greatest likelihood of dis-enrolling resulting in improved efficiency, manageable workloads and reduction in overall outreach spend.
Recipients are Likely to Recertify with Minimal Intervention

Average Dis-Enrollment Rate

Score = Probability that recipient will dis-enroll in the next 6 months

The model produces a score of 1 – 100 that indicates the likelihood that a Medicaid recipient will dis-enroll in the next 6 months.

Predictive Model Equation:

\[ A(DocDist)^b + C(PanelSize)^d + E(ProvSpec)^f + G(CaseMix)^h + I(AvgMemAge)^l + K(Prior Lapse)^l \]

~80 - 100 Variables

- Examples
  - Utilization Index
  - Co-morbidities
  - Age and Sex
  - Prior Lapse in Enrollment
  - Place Enrolled
  - Provider credentialing data
  - Unemployment in the area
  - Family Size
  - Avg. income level
  - Providers per capita
  - Provider panel size
  - Provider specialty
  - Procedures performed
  - Duration with plan
  - Tier Code
  - Distance to doctors

Case Studies
Case Studies

Turning Insight into Action

Dis-enrollment Relativity

Low Risk Members
Average Risk Members
High Risk Members

“Low Touch” Members – Minimal Outreach Expense, Focus on Quality and Medical Management

“High Touch” Members – Intense Outreach, Identify/Engage 6 – 12 months prior to Recertification Date
## Business Benefits

### Improved Engagement and Retention
- Improved retention of members across all risk segments
- Increased engagement in and compliance with medical management and QARR compliancy programs
- Increased member satisfaction and CAHPS Survey results
- Improved ability to provide value to entire member population

*Contributing to a positive shift in the medical cost curve*

### More Efficient Allocation of Resources
- Increased efficiency of acquisition, retention and outreach activities
- Increased effectiveness of disease management and health education interventions through assessments of member “readiness to change”
- Efficiency of customer service interactions
- Less time spent by sales staff on re-enrolling previously enrolled members

*Contributing to a lower administrative expenses*

### Opportunities for Innovation
- Earlier identification of high risk retention members
- Potential for sharing retention insight with providers to improve quality
- Potential for sharing retention insight with community to improve public programs or develop new partnerships
- Pre-cursor to improved quality and disease management outcomes

*Contributing to member-focused innovations*
External Data - How to Get Started
External Data – How to Get Started

It is important to understand what is involved in acquiring, analyzing and implementing external data in conjunction with predictive models to aid day-to-day decision making. We have seen that external data and predictive modeling applications can be used in a variety of ways to solve complex business problems in the healthcare industry. This section is dedicated to providing a step-by-step guide as to how an organization would purchase and use external data in their predictive modeling applications. Discussion topics include…..

- typical activities in the development and deployment of predictive models
- understanding how external data is used throughout the predictive model development and deployment lifecycle
External Data – How to Get Started

• **Regulated** consumer credit data for underwriting/ability to pay applications etc.
  – Criteria for sample of member data is sent to data provider
  – Data is produced for up to 2 or more historical points in time – “de-indentified”
  – Models are built on earlier sample and validated against more current sample (retro analysis)
  – Model implementation – real time transaction processing requires access to a current set of credit data usually via a real time interface to the credit bureau
  – Model implementation – batch processing requires a periodic refresh of credit data depending of frequency of model execution

• **Non-regulated and Marketing** demographic/lifestyle/summarized data for profiling, target marketing, product design etc.
  – Sample or full file of member data is sent to data provider
  – Data provider runs data quality analysis on member name/address and contact data
  – Data provider matches cleansed member data to current demographic/lifestyle datasets – returns enhanced file to source or summarizes results and produces member profile reports
  – Enhancement process can be run on a recurring schedule – allows for trending
  – Alternative methods include online tools/platforms that are installed within an insurer’s datacenter, allowing for self-service matching and profiling
External Data – How to Get Started

Steps for Incorporating External Data in your Predictive Models

Define Business Problem

Identify Sources of External Data and Procure Historical External Data

Enrich Internal Member Data with External Data

Test and Build Predictive Models

Identify Predictive External Data for Implementation

Develop Infrastructure to Apply External Data in Production

Monitor Performance of Predictive Models and Business Benefits

Applying Insight and Taking Action
About the Speakers
Mo Masud, Hartford, CT
A Senior Manager in Deloitte’s Advanced Analytics and Modeling Practice, with over 13 years of health insurance, technology and predictive modeling experience. Areas of expertise include: healthcare predictive modeling for private and public sector insurance, healthcare regulatory reporting, clinical expert systems, business rules management applications and technical implementation and integration of predictive modeling applications. Mo has led numerous engagements of implementation of large scale predictive modeling and custom technical applications for public and private integrated healthcare delivery networks and insurers that helped improve quality and continuity of care. Prior to his tenure in the consulting field, he held several data analysis positions with Empire Blue Cross Blue Shield in New York City including the management of Empire’s corporate wide Health Data Analysis and Reporting Group.

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Helen joined Experian in December 1980 and has designed, developed, consulted on, and led solution implementations in numerous data intensive projects covering the entire spectrum of Experian lines of business, including consumer credit and marketing, commercial credit and marketing, fraud, real estate, corporate systems (MIS), and automotive.

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