



# Market Conduct Annual Statement

*Data Mining and Predictive Analytics for Insurance Regulators*

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NAIC E-Reg Conference 2011

Data Mining and Predictive Analytics for  
Insurance Regulators:  
The Promise of Market Analysis

Birny Birnbaum  
Center for Economic Justice



## About Birny Birnbaum and the Center for Economic Justice

The Center for Economic Justice is a non-profit organization advocating on behalf of consumers for fair access to and fair treatment for basic services including insurance, credit and utility products.

Birny Birnbaum, CEJ's Executive Director, has spent the past 20 years working on insurance regulatory issues as a regulator, while Chief Economist and Associate Commissioner for Policy and Research at the Texas Department of Insurance, as a consulting economist to consumer and public agencies and as an advocate for consumers before administrative agencies and legislative bodies.

Among other responsibilities, Birny was responsible for the development of detailed statistical plans for market surveillance in Texas.



# Data Mining, Predictive Analytics and Business Intelligence

Used by Insurers for:

- Marketing and Sales
- Underwriting, Tier Placement, Rating
- Claims Settlement and Anti-Fraud Efforts





## **Example of Insurer Use of Data Mining and Predictive Analytics: Assurant Sales of Payment Protection**

Sloan Management Review, Winter 2011  
<http://sloanreview.mit.edu/the-magazine/2011-winter/52206/matchmaking-with-math-how-analytics-beats-intuition-to-win-customers/>

Payment Protection: Debt Cancellation Contract and/or Debt Suspension Agreements are Banking Product Version of Consumer Credit Insurance

Assurant Solutions manages product activation, claims, underwriting and customer retention for its bank customers



## Assurant Case Study (con't)

**Problem:** Increase retention rate for customers calling to cancel from industry standard of 16%

**Solution:** “Deep Analytics” – Brought in mathematicians (people who did not know anything about running call centers) to analyze mountains of data – details about every phone call received by the call center – every transaction recorded over four or five year period.

**Result:** Found that improving the customer operating experience – e.g., reduce call waiting time will improve customer satisfaction and improved satisfaction will result in higher retention rates – was wrong.



## Assurant Case Study (con't)

**Discovery:** Some customer service reps much better dealing with certain types of customers. By mining mountains of individual transactions, learned to match specific in-calling customers with specific customer service reps – even if waiting time was longer.

**Impact of Application of Predictive Analytics:** Retention Rate doubled, but Saved Fee Rate Tripled as more high-value (higher fee) customers retained.



## Assurant Case Study (con't)

### Why Don't Other Organizations Do This?

1. We don't have the IT resources to do this now.
2. We already do skills-based routing

Assurant insight: Not skills-based routing, but evidence-based or success-based routing





## National Underwriter, June 7, 2010 “Top 10 Technologies Seen Most Likely to Have Impact on P&C Insurance”

### **Business Intelligence and Analytics:**

Property and casualty insurers are increasing their focus in 2010 on improving how data is used and the value derived from past investments in data warehousing. Expanded use of data mining and analytics will assist p&c insurers in obtaining more granular insight into customers; greater operational performance; better claims performance; and reduced losses, leakage and underwriting risks.

The outcome will be improved risk management, compliance/reporting and customer intelligence that can be used for personalization and decisions regarding channels and products as well as provide insight into performance and process problems.





## **National Underwriter, June 7, 2010**

### **“Top 10 Technologies Seen Most Likely to Have Impact on P&C Insurance”**

#### **Predictive Modeling Tools:**

Traditional data analysis processes are typically historical (analysis and reporting of the past) or current day (analysis and reporting of current day position). Using predictive modeling, insurers can analyze data and create models that will enable them to predict future behaviors or outcomes.

Using predictive modeling will allow companies to look into the future and make predictions based on historical data analysis, pattern recognition and modeling. This insight will help companies avoid risks, understand future customer behavior so that they can intervene as needed, offer proactive customer service, project losses due to a catastrophe and improve underwriting profitability.





**National Underwriter, June 7, 2010**  
**“Top 10 Technologies Seen Most Likely to Have Impact on P&C Insurance”**

**Advanced Fraud Detection Solutions:**

It is critical that insurers reduce losses and leakage to retain profitability. Better control of fraud is essential in accomplishing these goals.

Advanced tools analyze data (structured and unstructured) to identify fraudulent claims in real time at point of data entry. This will assist insurers in reducing losses that result in driving up operational costs, and may result in companies having to increase premiums based on these losses.





## **Insurers' Use of Predictive Modeling High and Still Growing**

“Nearly 90 percent of U.S. insurance companies said the use of predictive modeling enhanced rate accuracy in 2010, according to the results of a survey conducted by Towers Watson.

*Property Casualty 360.Com, February 1, 2011*





**Primer on Predictive Analytics:**

“Predictive Analytics White Paper”

Charles Nyce

American Institute for CPCU/Insurance Institute of America

<http://www.aicpcu.org/doc/predictivemodelingwhitepaper.pdf>



## **Data Mining and Predictive Analytics for Market Analysis**

The new paradigm for market regulation is to move away from comprehensive market conduct examinations as the fundamental – and largely only – tool for data collection and market regulation enforcement – to a system grounded in market analysis employing a variety of market regulation tools focused on particular issues and companies stemming guided by market analysis.

**As market analysis is the foundation of more focused, efficient and effective market regulation, the availability of relevant data and information is the prerequisite for market analysis.**





## **Data Mining and Predictive Analytics for Market Analysis (con't)**

Summary vs. Transaction Data

What is Summary Data? Current MCAS

What is Transaction Data? Texas, ISO Statistical Plans





## Why Can't Summary Data Be Used for Data Mining and Predictive Analytics?

Can only answer pre-determined questions

Cannot discover new relationships – no multivariate analysis, no ability to analyze several characteristics simultaneously



## Limitations of Summary Data: MCAS Examples

Life: Replacements by Specific Product and Policy Size, Death Claims Denied by Specific Product and Policy Size

Annuity: Replacements by Specific Product and Policy Size

PPA/HO: Cancellations at 59 Days by Product Type and Neighborhood; Claims Closed Without Payment or Settled after 180 days by Type of Claim and Neighborhood

All: No ability to model outcomes



## **Limitations of Summary Data: MCAS Examples**

Data Quality – Limited Ability for Auditing, Reasonability Testing

Data Quality – Comparisons Across Reporting Companies Greatly Limited by Differing Data Definitions

Evaluating Results – Giving Answers to the Test Ahead of Time





## Capabilities of Transaction Data

High Data Quality, Great Ability for Data Auditing

Differing Company Data Definitions a Non-Event

Analyze Multiple Characteristics Simultaneously

Add External Data

Answer Unlimited Questions / Questions Not Previously Anticipated

Efficient for Changes



## **Barriers to Data Mining for Market Analysis**

**Regulators – Time, Resources, Expertise**

How do financial regulators analyze mountains of financial statement data?

**Industry – Contradictory Positions**

Effective Market Analysis means reduced regulatory costs for the vast majority of insurers: Regulators employing focused tools on bad actors and reducing comprehensive exam – what insurers have asked for. Yet insurers fight the necessary expanded data collection necessary for market analysis.





## **Addressing Barriers to Data Mining for Market Analysis**

**Ideal:** Centralized Collection of Transaction Data with Associated Data Mining and Predictive Analytics Expertise

**Next Best:** State-Specific Initiatives





## **Data Mining and Predictive Analytics for Market Analysis:**

Regulatory Tools to:

Enable Regulators to be Pro-Active

Match Industry Practice

Create More Effective and More Efficient Market Surveillance and  
Consumer Protection



## For Further Information

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