Big Data: Increased Use of Digital Technology in Insurance

Presentation to the
IAIS Market Conduct Working Group

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April 28, 2017

The Center for Economic Justice

CEJ is a non-profit consumer advocacy organization dedicated to representing the interests of low-income and minority consumers as a class on economic justice issues. Most of our work is before administrative agencies on insurance, financial services and utility issues.

On the Web: www.cej-online.org

Birny Birnbaum, Director of CEJ

Birny is an economist and former insurance supervisor. He served as Associate Commissioner for Policy and Research and the Chief Economist at the Texas Department of Insurance. At the TDI, he provided technical and policy analysis and advice to the Commissioner of Insurance. Birny was also responsible for the development of data collection programs for market surveillance and the analyses of competition, availability, affordability and unfair discrimination in insurance markets.

Prior to coming to the TDI, Birny was the Chief Economist at the Office of Public Insurance Counsel (OPIC), working on a variety of insurance issue. OPIC is a Texas state agency whose mission is to advocate on behalf of insurance consumers.

He has served for many years as a designated Consumer Representative at the National Association of Insurance Commissioners and has testified many times before supervisors and legislators at the state, federal and international levels. He is a member of the Federal Advisory Committee on Insurance, chairing the Subcommittee on Affordability and Availability of Insurance.

Birny was educated at Bowdoin College and the Massachusetts Institute of Technology. He holds two Master's Degrees from MIT in Management and in Urban Planning with concentrations is finance and applied economics.

Why CEJ Works on Insurance Issues

Insurance Products Are Essential Financial Security Tools for Individual and Community Economic Development:

CEJ works to ensure Fair Access to and Fair Treatment for these essential products and services, particularly for low- and moderate-Income consumers.

Insurance is the Primary Institution to Promote Loss Prevention and Mitigation, Resiliency and Sustainability:

CEJ works to ensure insurance institutions maximize their role in efforts to reduce loss of life and property from catastrophic events and to promote resiliency and sustainability of individuals, businesses and communities.

Increased Use of Digital Technology in Insurance: Big Data

"Increased Use of Digital Technology in Insurance" is a combination of two interrelated things – insurers' use of Big Data and increased use of internet-connected devices.

These activities may take a variety of forms or names: Predictive modeling, price or claims optimization, telematics/wearable devices, artificial intelligence, the internet of things, mobile-device sales, distribution or claims settlement, among many others.

But, all these activities stem from massive increases in data and information about individual consumers and massive increases in data storage and computing power.

The key challenge for society and insurance supervisors is how to promote innovation that is accountable to consumers and promotes societal values.

Insurers' Use of Big Data

Insurers' use of Big Data has transformed the way they do marketing, pricing and claims settlement. Big Data means:

- Massive databases of information about (millions) of individual consumers
- Associated data mining and predictive analytics applied to those data
- Scoring models produced from these analytics.

The scoring models generated by data mining and predictive analytics are algorithms. Algorithms are lines of computer code that rapidly execute decisions based on rules set by programmers or, in the case of machine learning, generated from statistical correlations in massive datasets. With machine learning, the models change automatically.

What's So Big About Big Data?

1. There has been a revolution in insurance pricing, marketing and claims settlement resulting from insurers' use of Big Data -- massive databases of new insurance and non-insurance personal consumer information with associated data mining and predictive analytics and scoring.

2. Insurers' use of Big Data has huge potential to benefit consumers and insurers by transforming the insurer-consumer relationship, by discovering new insights into and creating new tools for loss mitigation and improving the availability and affordability of insurance with improved insurance products and processes.

3. Insurers' use of Big Data has huge implications for fairness and affordability of insurance and for supervisors' ability to keep up with the changes and to protect consumers from unfair practices

4. The current insurance supervisory framework in the U.S. and in many other jurisdictions – particularly related to risk classifications and unfair discrimination – does not provide supervisors with the tools to effectively respond to insurers' use of Big Data. Big Data has massively increased the market power of insurers versus consumers and versus supervisors.

5. Market forces alone – "free-market competition" – cannot and will not protect consumers from unfair insurer practices. So-called "innovation" without some consumer protection and public policy guardrails will lead to unfair outcomes.

6. Regulatory reform emphasizing supervisory collection, analysis and publication of consumer market outcomes – Regulatory Big Data – will yield more efficient and effective supervision for consumers, insurers and producers, will promote more competitive markets and will foster quicker adoption of innovative technologies that benefit consumers and fulfill public policy goals.

The Most Important Task for Policymakers and Supervisors

The most important task for policymakers is to set out goals and values for the future of insurance:

"Before we can choose our tools and techniques, we must first choose our dreams and our values, for some tools serve them while others make them unobtainable."[1]

[1] From Tom Bender.

What Do We Want the Future of Insurance to Look Like?

1. Broad Availability and Affordability of Essential Insurance Products Resulting in Broad/Universal Coverage for Consumers and Businesses: Eliminate the Insurance Gap to Promote Sustainability and Resilience.
2. Risk-Based Prices to Provide Proper Signals of the True Cost of Building, Driving or Other Activity and to Provide Incentives for Loss Mitigation and Risk Avoidance.
3. Empowered Consumers Who Purchase Insurance Products on the Basis of
   a. Loss Mitigation Partnerships with Insurers;
   b. Insurers' Transparency About and Protection of Consumers' Personal Information; and
   c. Quality of Insurers' Actual Consumer Market Outcomes.

Personal Consumer Information in Big Data

- Telematics – Auto, Home, Wearable Devices
- Social Media
- Shopping Habits/Purchase History
- Hobbies and Interests
- Demographics/Household Data/Census Data
- Government Records/Property Records
- Web Tracking
- Vehicle Registration and Service Records
- Facial Analytics
- Mainstream Credit Files: Loans, Credit Cards
- Alternative Credit Data: Telecom, Utility, Rent Payment

Examples of Insurer Big Data Algorithms

Pricing/Underwriting:

- Price Optimization/Demand Models
- Customer Value Scores,
- Telematics,
- Credit Scores,
- Criminal History Scores,
- Vehicle Scores,
- Catastrophe Risk Modeling/Rating
- Accelerated Life Insurance Underwriting

Claims:

- Fraud Scores,
- Severity Scores
- Telematics

Concerns About Insurers' Use of Big Data

Barocas and Selbst: *Big Data's Disparate Impact*

"In contrast to those traditional forms of data analysis that simply return records or summary statistics in response to a specific query, data mining attempts to locate statistical relationships in a dataset. In particular, it automates the process of discovering useful patterns, revealing regularities upon which subsequent decision-making can rely. The accumulated set of discovered relationships is commonly called a "model," and these models can be employed to automate the process of classifying entities or activities of interest, estimating the value of unobserved variables, or predicting future outcomes.

"These all involve attempts to determine the status or likely outcome of cases under consideration based solely on access to *correlated* data. Data mining helps identify cases of spam and fraud and anticipate default and poor health by treating these states and outcomes as a function of some other set of observed characteristics.

In particular, by exposing so-called "machine learning" algorithms to examples of the cases of interest (previously identified instances of fraud, spam, default, and poor health), the algorithm "learns" which related attributes or activities can serve as potential proxies for those qualities or outcomes of interest. In the machine learning and data mining literature, these states or outcomes of interest are known as "target variables."

“The proper specification of the target variable is frequently not obvious, and it is the data miner’s task to define it. In doing so, data miners must translate some amorphous problem into a question that can be expressed in more formal terms that computers can parse.

Through this necessarily subjective process of translation, though, data miners may unintentionally parse the problem and define the target variable in such a way that protected classes happen to be subject to systematically less favorable determinations.“

Advocates of algorithmic techniques like data mining argue that they eliminate human biases from the decision-making process. But an algorithm is only as good as the data it works with. Data mining can inherit the prejudices of prior decision-makers or reflect the widespread biases that persist in society at large. Often, the “patterns” it discovers are simply preexisting societal patterns of inequality and exclusion. Unthinking reliance on data mining can deny members of vulnerable groups full participation in society.

New York Times, August 10, 2015: Algorithms and Bias: Q. and A. With Cynthia Dwork

> Algorithms have become one of the most powerful arbiters in our lives. They make decisions about the news we read, the jobs we get, the people we meet, the schools we attend and the ads we see. Yet there is growing evidence that algorithms and other types of software can discriminate. The people who write them incorporate their biases, and algorithms often learn from human behavior, so they reflect the biases we hold.
>
> Q: Some people have argued that algorithms eliminate discrimination because they make decisions based on data, free of human bias. Others say algorithms reflect and perpetuate human biases. What do you think?
>
> A: Algorithms do not automatically eliminate bias. . . .Historical biases in the . . .data will be learned by the algorithm, and past discrimination will lead to future discrimination.

Fairness means that similar people are treated similarly. ***A true understanding of who should be considered similar for a particular classification task requires knowledge of sensitive attributes, and removing those attributes from consideration can introduce unfairness and harm utility.***

Q: Should computer science education include lessons on how to be aware of these issues and the various approaches to addressing them?
A: Absolutely! First, students should learn that design choices in algorithms embody value judgments and therefore bias the way systems operate. They should also learn that these things are subtle: For example, designing an algorithm for targeted advertising that is gender neutral is more complicated than simply ensuring that gender is ignored. They need to understand that classification rules obtained by machine learning are not immune from bias, especially when historical data incorporates bias.

White House Report on Big Data

"For all of these reasons, the civil rights community is concerned that such algorithmic decisions raise the specter of "redlining" in the digital economy—the potential to discriminate against the most vulnerable classes of our society under the guise of neutral algorithms. . . . .But the ability to segment the population and to stratify consumer experiences so seamlessly as to be almost undetectable demands greater review, especially when it comes to the practice of differential pricing and other potentially discriminatory practices. It will also be important to examine how algorithmically-driven decisions might exacerbate existing socio-economic disparities beyond the pricing of goods and services, including in education and workforce settings."

Numerous Examples of Big Data Applications Raising Consumer Concern Provided at End of Presentation

Why is Insurance Different from Other Consumer Products?

1. **The insurance is required** – by law and by lenders requiring protection of home or vehicle collateralizing the loan. Limits normal competition.
2. **Contract is a promise for future benefits** if an undesirable event occurs. If the product "fails" – the consumer learns the insurance policy won't cover the loss – she is stuck and can't purchase another policy that would protect her against a known loss. ***Consumers have little or no information about the insurers' performance.*** Again, limits normal competition.
3. **Actuarial principles and statutes require insurance prices to be cost-based.** The requirement for cost-based pricing is to protect insurer financial condition and prevent intentional or unintentional unfair discrimination.

Insurer Use of Big Data Scoring Models Lack Fundamental Consumer Protections With Little or No Accountability to Consumers or Supervisors

- Accuracy and Completeness of Data
- Oversight of Data Bases
- Disclosures to Consumer About Data Used, How Used and Privacy Protections
- Consumer Ability to Challenge False Information
- Supervisors' Knowledge Of and Capability to Provide meaningful Oversight
- Disparate Impact Discrimination Against Low-Income and Minority Consumers and other protected classes
- Potential for Asymmetric Use of Data
- Greater Cybersecurity Danger for Consumers and Insurers

The Supervisory Framework Breaks Down in an Era of Big Data

- Insurers now using data not subject to supervisory oversight or consumer protections of, for example in the U.S., the Fair Credit Reporting Act. Supervisors have no ability to ensure the accuracy or completeness of these new data sets.
- Concept of unfair discrimination – consumers of similar class and hazard treated differently – becomes meaningless when insurers submit rating plans with millions of rate classes.
- New risk classifications can be proxies for protected classes, but with no recognition of disparate impact, risk classifications that have the effect of discriminating against protected classes are permitted. Big Data amplifies this problem.
- Pricing is effectively deregulated. Supervisors must rely on insurer representations, not independent analysis.

21st Century Insurance Supervision

1. Innovation in Insurance Supervision – Enhanced Data Collection for Market Monitoring and for Development of New Tools for Consumers
    a. Routine Collection – and Publication – by Supervisors of the Types, Sources and Uses of Data Used by Insurers for Marketing, Sales, Pricing, Claims Settlement and Loss Mitigation.
    b. Routine Collection – and Publication – by Supervisors of Granular Consumer Insurance Market Outcomes, including transaction-detail data on quotes, sales and claim settlements.

21^{st} Century Insurance Supervision

2. Innovation in Insurance Supervision – New Tools to Empower Consumers. Create a Future in Which Consumers Shop for Insurance Based Not Only on Price, But:
   a. Insurers' and Intermediaries' Transparency About and Use and Protection of Consumers' Personal Information;
   b. Insurers' and Intermediaries' Performance Based on Actual Market Outcomes for Consumers; and
   c. Insurers' and Intermediaries' Tools and Partnerships for Loss Mitigation, Loss Prevention and Consumer Empowerment for Risk Management to Control Premium Costs

21st Century Insurance Supervision

3. Innovation in Insurance Supervision – Addressing Challenges of Big Data
   a. Modernize Oversight of Risk Classifications
   b. Set Out Guidelines and Values for Innovation
   c. Institutionalize Greater Consumer Stakeholder Involvement in Insurance Supervision

1a: Improved Market Monitoring: Data Types, Sources and Uses

To a great extent, supervisors – and, of course, consumers and policy makers – do not know what types of information insurers are using and what they are using the information for and how they are using it.

A logical first step is to develop a template for jurisdictions to use to request from insurers the types, sources and uses of data for various insurance functions.

For each source of data, the insurer would provide a name/description of the data, the source of the data and the use or uses of the data -- pricing (including underwriting), marketing, claims settlement, antifraud, loss mitigation and other.

This periodic survey will provide supervisors with the basic overview of what types of information are being used by insurers and what the information is being used for. This information is essential for supervisors to respond to policy makers and to foster public discussion over potentially controversial types of data.

1b: Improved Market Monitoring: Market Outcomes

Regulatory Big Data is needed for a robust market analysis – one that includes the ability to monitor the actual consumer outcomes in insurance markets.

The type of data needed for improved market outcome monitoring is transaction-detail data for quotes, sales and claim settlements.

Insurance supervisors lag other financial supervisors in the collection of granular data for market monitoring and, consequently, in the ability to monitor consumer market outcomes.

Regulatory Big Data for Monitoring Consumer Market Outcomes

The supervisory framework of monitoring inputs in hopes of ensuring good consumer outcomes is no longer feasible in the era of Big Data.

Insurers' use of Big Data requires an approach that focuses on collecting and analyzing granular data on consumer market outcomes.

Regardless of what an insurer tells a supervisor in filings, supervisory Big Data allows a supervisor to monitor what is actually happening to consumers – both in terms of insurers' pricing and claim settlement intent and broader public policy issues.

- Do consumer market outcomes reflect the filings' representations?
- Are consumers with similar claims receiving similar claim settlements regardless of income or race?
- What types of consumers in what locations are facing severe affordability problems and why?
- How can insurers, government and consumers partner for greater loss mitigation and resiliency?

More Granular Data Reporting by Insurers and Analysis by Regulators Produces Big Improvements in Efficiency and Effectiveness of Insurance Supervision

More granular data reporting allows more refined market analysis.

More granular data reporting means a huge reduction in special data calls because supervisors already have the data in almost all cases.

More granular data reporting means more focused supervisory investigations and inquiries.

More granular data reporting means identifying insurers with good consumer market outcomes and leaving them alone.

More granular data reporting means supervisory involvement in company management policies and procedures if there is a problem, not as a routine practice.

Additional Benefits of Regulatory Big Data

- Calibrate inputs/processes to outcomes
- Assist financial supervision
- More efficient/effective market supervision
- Information to evaluate insurer and producer practices
- Information to evaluate existing and proposed public policies
- Information to meaningfully evaluate affordability and availability and competition issues
- **Information to empower consumers and promote competitive markets**

On the last point, consider how little information consumers have regarding the market performance of insurers and how publication of such information – frequency of claim denials, frequency of attorney involvement, average time to settle different types of claims and more – would empower consumers in the same way that information on car safety empowers consumers and motivates automakers.

Transaction-Detail Reporting of Insurance Consumer Market Outcomes is Not State-of-the-Art Technology –

In the U.S., all insurers in some lines in some or all states and some insurers in other lines in all states have or will be reporting transaction-detail data to state insurance regulators.

Examples:

Workers' Compensation – All Insurers in Most or All States

Personal and Commercial Auto – Some Insurers in All States (to the Insurance Services Office and the Texas Department of Insurance)

Residential and Commercial Property – Some Insurers in All States (to ISO) and All Insurers in Texas (to the TDI)

Life Insurance – Most Insurers in All States (to the NAIC) for Principles-Based Reserving

2a: Supervisory Innovation to Empower Consumers: Insurers Will Be Graded – and Consumers Will Base Purchases – on Treatment and Protection of Their Personal Information

- Disclosure – What data are you collecting and what specifically are you using it for?
- Consent – Are you obtaining my informed permission to access and collect this personal information? What the specific-exceptions to collecting my data without my consent?
- Mutually-Agreed Uses – Are you limiting your use of the data to things we have agreed upon? What are the specific exceptions to using my data without my consent?
- Access – Can I see the data you have gathered about me to see if it is correct and accurate?
- Error Correction – Do I have the ability to correct errors in the data and have my rate calculated or claim settled with correct data?

- Ownership – Do you agree that I own my data and can limit its uses and distribution?
- Portability – Can I take my personal data to another insurer?
- Symmetric Use – Are the data available to both you and me when I apply for coverage or file a claim?
- Quality and Effectiveness of Cybersecurity Practices – How well do you protect my personal information and what are your policies in the event of a data breach?

2b: Supervisory Innovation to Empower Consumers: Insurers Will Be Graded – and Consumers Will Base Purchases – on Actual Consumer Market Outcomes

2c: Supervisory Innovation to Empower Consumers: Insurers Will Be Graded – and Consumers Will Base Purchases – on Insurers' Tools and Partnerships with Consumers for Loss Mitigation and Resilience

3a: Supervisory Innovation to Address Challenges of Big Data: Modernize Oversight of Risk Classifications

Risk classification represents insurers' – and society's – decisions about how to group consumers for the purpose of assigning premium. Risk classification determines the affordability and availability of essential financial security tools – insurance – for consumers.

Historically, the only justification needed for a risk classification is a correlation. But, in an era of Big Data and the modeling of rates and risk classifications, such a test is arbitrary and opaque. We see this in the huge differences in rate impact of the same risk classification across insurers and even for an insurer across states. There is a need for a 21st century approach to oversight of risk classifications – more transparency and more accountability

21st Century Supervision of Insurance Risk Classification

Require More Than A Correlation:

- Risk-Based Pricing / Avoid Adverse Selection
- Promote Loss Mitigation / Degree of Consumer Control
- Transparency to Consumers/ Accuracy & Completeness of Data
- Honor the Risk-Spreading Purpose and Function of Insurance
- Avoid/Minimize Disparate Impact

Risk Classifications – whether called underwriting guidelines, tier placement rule or rating factors – should all be approved prior to use with opportunity for stakeholder input.

3b: Supervisory Innovation to Address Challenges of Big Data: Values and Guidelines for Innovation

Supervision and Innovation can be compatible – informed supervision can promote beneficial innovation.

Poor or misguided supervision can thwart innovation and entrench incumbents.

Supervisory innovation is needed – towards improved analytics of market outcomes and consumer experiences.

Deregulation is not supervisory innovation.

Consumer stakeholders must be part of the policy discussions regarding innovation in insurance products and supervision.

Opportunities for Innovation in Insurance Are Huge

Opportunities for beneficial innovation abound:

- to empower consumers,
- to promote resiliency and sustainability,
- to improve availability and affordability of essential insurance products.

But such outcomes are not guaranteed – indeed, we have seen "innovation" produce different and undesirable outcomes.

What Should the Values and Goals of Innovation Be?

- Honor the fundamental insurance principle of risk pooling.
- Empower consumers and communities to take action for loss prevention, resiliency and sustainability
- Promote greater availability and affordability of essential insurance products
- Provide good value in or improve the value of insurance products
- Empower consumers to improve the operation of markets and promote beneficial competition
- Promote or improve the intended operation of the product

Example: Price Optimization/Consumer Demand Models

Deloitte Presentation at 2014 CAS Ratemaking Seminar

What is the ultimate goal of price optimization? Increase Profit

Insurance pricing can be classified in three levels of sophistication: Basic Rating Plans, Underwriting Models, and Market Demand Models

Market Demand Models: Customer price elasticity to optimize price

A key advantage of including underwriting components is that the insured's price elasticity and demand behavior **is on the final price at the policy level** and not the coverage and sub-component level. Optimizing price on the sub-coverage level creates a gap between the results and the insured's price behavior.

Example: Pricing Models

EagleEye Analytics Real Time Scoring Model

An insurer testimonial: when our underwriter is sitting at his or her desk, and they're looking at a renewal or quoting new business, there are two scores that pop up: a frequency score a kind of underwriting quality score and also a pricing score we use to help price renewal business and new business quoting. The risk scoring goes way beyond just financial data, it uses all of our characteristics in our data whether used for rating or not and then we are also able to bring in third party data, Census Bureau data, to supplement that.

EagleEye Analytics Real Time Scoring Model

Step 3: Build Elasticity Models. The loss ratio model will provide rate indications greater than you will take in one revision. **Elasticity models provide the data you need to forecast how your policies will respond to price change. Talon Elasticity models have multiple segments, not one curve for the entire portfolio.**

Step 4: Optimize. Using the Loss Ration Models, Elasticity Models and incorporating the aging that understands the new business penalty – it's time to make rate level decisions. **Optimization takes these models and applies them specifically to the policies you want. It's a tool to pick the perfect rate level** and forecast future profitability and growth.

Step 5: **Filing Machine Learning models is becoming common**. . . . EagleEye customers have filed and been approved in 45 states across multiple lines of business. . . .**As a bonus – once you switch to machine learning, your competition will not be able to reverse engineer your rating plan.**

Example: Pricing Model

TransUnion Criminal History Score

"TransUnion recently evaluated the predictive power of court record violation data (including criminal and traffic violations)

"While a court record violation is created during the initial citation, the state MVR is updated later and may be delayed depending on a consumer's response to the citation. For example, if someone pleads guilty and pays a ticket immediately, the state MVR will be updated in approximately two months. If the ticket is disputed in court, in contrast, the state MVR may not be updated for 6–19 months or longer.

"Also, as court records are created when the initial citation is issued, they provide insight into violations beyond those that ultimately end up on the MVR—such as violation dismissals, violation downgrades, and pre-adjudicated or open tickets."

Example: Claim Fraud Scores, Claim Severity Scores

LexisNexis Claim Tools

“LexisNexis (LN) seeks to provide a Single Point of Entry for delivering all of information directly back into a carrier’s system whether from a marketing standpoint, underwriting process or especially the claims part.

“LN has over 10,000 data sources that feed into its infrastructure each month and has contributed information from the industry.

“Claims Data Fill” – deliver data and analytics directly into claims system in the claims process regarding parties, vehicles and carrier information. Used to verify information provided to insurers and provide indicators beyond the data to identify whether a social security number is an indicator of fraud or whether an address provided is a good address. Has an analytic component at first notice of loss and throughout the claim, constantly monitoring the claim looking for fraudulent activities. Real time data verification and enhancement with fraud scoring and attributes

LexisNexis Claim Tools (con't)

"Example, insured calls in, rear-ended, all I got was license plate:

"Claims Data Fill takes that license plate, reach out to DMV to get vehicle registration to get VIN number, we have policy database and get the carrier and policy information, take the registered owner, go out to public records, pull back their address, date of birth, telephone number, social security, wrap that into a package and put it back into our system, 88% of the time done in less than 5 seconds.

"Take minimum information provided at first notice of loss, provide a fraud score at the initial notice of loss. Daily monitoring of claim every time new information comes in, able to run various scores: fraud scores, severity score."

Example: Fraud Scores

LexisNexis: "Severity Focus"

"Identify claims with the potential to become severe: SeverityFocus utilizes advanced predictive modeling to identify claims with the potential to become severe as they develop claims that otherwise would go undetected until much later.

"SeverityFocus does not constitute a "consumer report" as that term is defined in the federal Fair Credit Reporting Act, 15 USC 1681 et seq. (FCRA)."

Example: Claims Optimization

Insurer uses Big Data consumer demand modeling to develop a claim settlement offer (very) early in the claim process with a high likelihood of acceptance by the consumer.

As with price optimization moving insurance pricing from costs to what the consumer is willing to pay, claims optimization moves claim settlement from objective analysis of the cost of a claim to what the the consumer is willing to accept.

Example: Claims Scoring

StatSoft's Predictive Claims Flow™

"A predictive analytics and reporting solution for property and casualty insurance companies, can help you reduce loss ratios and improve bottom-line profitability, often within a few months of implementation. StatSoft's Predictive Claims Flow™ solution incorporates predictive modeling at every stage of an insurance claim. This closed loop system has a unique scoring system that rates each claim at its inception on its propensity for fraud and then continually rescores the claim as it goes through each step of a claim's lifecycle."

Example: Fraud Scores

Infosys Social Network Analysis

"The SNA tool combines a hybrid approach of analytical methods. The hybrid approach includes organizational business rules, statistical methods, pattern analysis, and network linkage analysis to really uncover large of amounts of data to show relationships via links. When one looks for fraud in a link analysis, one looks for clusters and how these clusters link to other clusters. Public records such as judgments, foreclosures, criminal records, address change frequency and bankruptcies are all data sources that can be integrated into a model. Using the hybrid approach, the insurer can rate these claims. If the rating is high, it indicates the claim is fraudulent."

Example: Fraud Scores

Infosys: Social Customer Relationship Management

"Social CRM is neither a platform nor a technology, but rather, a process. It is important that insurance companies link social media to their CRM. Social CRM . . . gathers data from various social media platforms. It uses a "listening" tool to extract data from social chatter,. . . .The reference data along with information stored in the CRM is fed into a case management system. The case management system then analyzes the information based on the organization's business rules and sends a response. The response, from the claim management system as to whether the claim is fraudulent or not, is then confirmed by investigations independently, since the output of the social analytics is just an indicator and should not be taken as the final reason to reject a claim."