

# **Who is Watching You? Insurers' Use of Big Data and Regulatory Implications**

Presentation to  
Insurance Regulatory Examiners Society  
Career Development Seminar

**Birny Birnbaum**  
Center for Economic Justice

July 21, 2015

## 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](http://www.cej-online.org)

## Why CEJ Works on Insurance Issues

***Essential Financial Security Tool for Individual and Community Economic Development:*** CEJ Works to Ensure Access and Fair Prices for These Essential Products and Services, particularly for Low- and Moderate-Income Consumers.

***Primary Institution to Promote Loss Prevention and Mitigation:*** CEJ Works to Ensure Insurance Institutions Maximize Their Role in Efforts to Reduce Loss of Life and Property from Catastrophic Events.

# Outline of Presentation

1. Big Data Defined
2. Insurer Big Data Application: Lexis Nexis Claims Tools
3. History of Insurer Use of Big Data for Risk Classification
4. Insurer Big Data Application: Price Optimization
5. Insurer Big Data Application: Telematics
6. Regulatory Resources for and Oversight of Insurers' Use of Big Data are Limited.
7. Regulatory Data Collection to Monitor Market Outcomes

# Big Data Defined

- 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.

## Insurance Big Data Example: LexisNexis Claims Tools

More Data Earlier: The Value of Incorporating Data and Analytics for Claims Handling at

<http://www.lexisnexis.com/risk/insights/value-incorporating-data-analytics-claims-handling.aspx>

For third-party bodily injury settlements, the study found that more data earlier resulted in:

- 15–25 percent lower severity payments\*
- 25–49 percent lower attorney involvement
- 5–15 percent shorter cycle times

Similar results were obtained for third-party property damage claims:

- 10–15 percent lower severity payments
- 8–15 percent shorter cycle times

## LexisNexis Claims 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.

## LexisNexis Claims Tools

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

Example, insured was 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.



## LexisNexis Claims Tools

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

New contributory claims database, much deeper than prior claims databases – this is claims file submitted as new information added – allows us to track vehicles across carriers, medical providers across carriers – sharing of information much deeper than has been done before. Text mining, watch list mixed with LexisNexis data.

**Take-Away:** Many databases and scoring models with little or no transparency to consumers and regulators and outside the scope of consumer protection laws like the FCRA.

## **Public Policy Goals of Risk Classification**

1. Protect Insurer Financial Condition by Minimizing Adverse Selection
2. Promote Loss Mitigation by Providing Incentives for Less Risky Behavior and Disincentives for More Risky Behavior

***Foundation of Risk Classification is Cost-Based Pricing***

***Foundation of Statutory Standards for Rates – “Not Unfairly Discriminatory” – is Cost-Based Pricing***

# History of Insurer Big Data Use for Risk Classification

Old Old School Big Data: Advisory Organization Loss Costs. Oversight of Data, Advisory Organization, Analytic Techniques, Filings, Complete Transparency

Old School Big Data: Credit-Based Insurance Scores. Limited Consumer Protections for Completeness and Accuracy of Data via the FCRA, Limited Oversight of Modelers and Models, Limited Transparency

New School Big Data: Predictive Modeling of Any Database of Personal Consumer Information. No Consumer Protections for Completeness and Accuracy of Data, No Oversight of Modelers and Models, No Transparency to Consumers

## **Insurer Big Data Application: Price Optimization**

Adjusting cost-based rate indications based on “demand models.” Demand models are models of consumer price elasticity of demand and competitive alternatives. Price elasticity of demand is consumer willingness to pay in face of price change – how likely a consumer is to shop for new insurance in face of, say, 7% rate increase.

## Allstate CRG Rating Examples

- Drivers with same gender, rating territory and years with prior carrier:

Birthdate	Rate Relativity	Rate Impact
4/16/1943	0.9803	
4/17/1943	1.0510	+7.2%
12/7/1980	0.9374	
12/8/1980	1.0252	+9.4%
7/4/1983	1.1784	+13.2%
7/7/1983	1.0406	

## Small Midwest Insurer Auto Filing: Big Data Run Amok

Rating Plan with Millions of rating cells for a book of business of 25,000 policyholders.

“Geo-Demographic Data” for Creating ZIP Code Factors initially based on “1,044 Raw Demographic and 600 industry NAICS variables.” Factors include:

Medicare Payments  
Housing 1 Unit Detached  
Weather Index  
Quality of Life Index  
Motor Vehicle Theft Index  
Manufacturing Employment  
Alcoholic beverage at home  
Artificial sweeteners  
Bathroom Linens  
Blue Collar Profile

Dating Services  
Hospital Room and Services  
Margarine  
School Lunches

## **PO, Other Insurer Big Data Models Lack Key Consumer Protections**

- Accuracy and Completeness of Data
- Regulatory Oversight of Data Bases
- Disclosures to Consumer: Data Used and How Used
- Consumer Ability to Challenge False Information
- Discrimination Against Low-Income and Minority Consumers
- Exacerbate Availability and Affordability Issues
- Undermine Insurance Pricing Role in Loss Mitigation
- Asymmetric Access and Use of Information
- Increased Cybertheft Impact

## Telematics -- Allstate Patent

A method and apparatus for collecting and evaluating powered vehicle operation utilizing on-board diagnostic components and location determining components or systems. The invention creates one or more databases whereby identifiable behavior or evaluative characteristics can be analyzed or categorized. The evaluation can include predicting likely future events. The database can be correlated or evaluated with other databases for a wide variety of uses.<sup>1</sup>

A new patent secured by insurer Allstate reveals an invention that has the potential to evaluate drivers' physiological data, including heart rate, blood pressure and electrocardiogram signals, which could be recorded from steering wheel sensors.<sup>2</sup>

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<sup>1</sup> U.S. Patent 9,053,591

<sup>2</sup> Chicago Tribune, April 19, 2015



## Telematics -- Allstate Patent

The invention is not limited to trucks and automobiles but includes all powered equipment such as boats, airplanes and railroads. The invention utilizes time marked data that can be correlated with information from separate databases, particularly data that is also time marked. The recorded data may facilitate the vehicle owner monitoring the use of the vehicle by others, e.g., employees, automobile renters or family members, e.g., teenage drivers. The recorded data may also provide an objective behavioral data collection system for third parties, e.g., life and health insurance companies, lending institutions, credit rating companies, product and service marketing companies, potential employers, to evaluate an individual's behavioral characteristics in a real life and commonly experienced situation, i.e., driving a motor vehicle.<sup>3</sup>

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<sup>3</sup> U.S. Patent 9,053,591

## Telematics -- Allstate Patent

The combined data and evaluations can be useful in predicting likely future behavior, including differing lifestyle and employment environments. In addition, categories of driver personality type can be created and an individual can be matched with one or more categories.<sup>4</sup>

"Changes in an individual driver's profile may be noted and may be suggestive of a change in life style or employment. This may be correlated to spending and credit histories."<sup>5</sup>

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<sup>4</sup> U.S. Patent 9,053,591

<sup>5</sup> U.S. Patent 9,053,591

## **Telematics: Liberty Mutual, American Family Home Sensor**

Massachusetts-based Liberty Mutual disclosed recently that it has begun a partnership with high-tech smoke alarm company Nest (owned by Google) that would provide the company's products to participating insurance clients. (Boston Globe, June 29, 2015)

Here's how it would work: Clients who choose to use the Nest Protect smoke and carbon monoxide alarm become eligible for discounts through Liberty Mutual's Smart Home Verified Discount program. They can gain additional discounts for choosing to share data proving the alarm devices are functioning properly.

Specifically, customers authorize Nest to tell Liberty Mutual on a monthly basis if the Nest Protect batteries are charged, sensors are in order and the WiFi connection is functional. The Nest device is controllable through a typical smart phone, and the alarm can also be silenced this way, according to Nest's web site.

## Consumer Concerns with Telematics

1. Another Black Box application undermining loss mitigation or a new tool realizing the huge potential for loss mitigation and consumer empowerment
2. Data Ownership/Consumer Privacy\*\*\*
3. Cybersecurity\*\*\*
4. Asymmetric Information\*\*\*
5. Oversight of Modelers
6. Lack of Regulatory Guidance\*\*\*

\*\*\* Implications for Market Regulators

# WEBLINING AND OTHER RACIAL JUSTICE CONCERNS IN THE ERA OF BIG DATA

NCLC WEBINAR  
JUNE 3, 2014

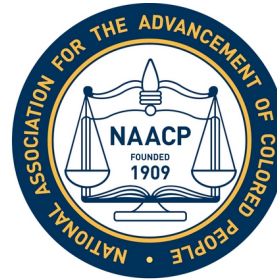
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# Civil Rights Principles for the Era of Big Data



[HTTP://WWW.CIVILRIGHTS.ORG/BIGDATA](http://www.civilrights.org/bigdata)

# Civil Rights Principles for the Era of Big Data

1. Stop High-Tech Profiling.

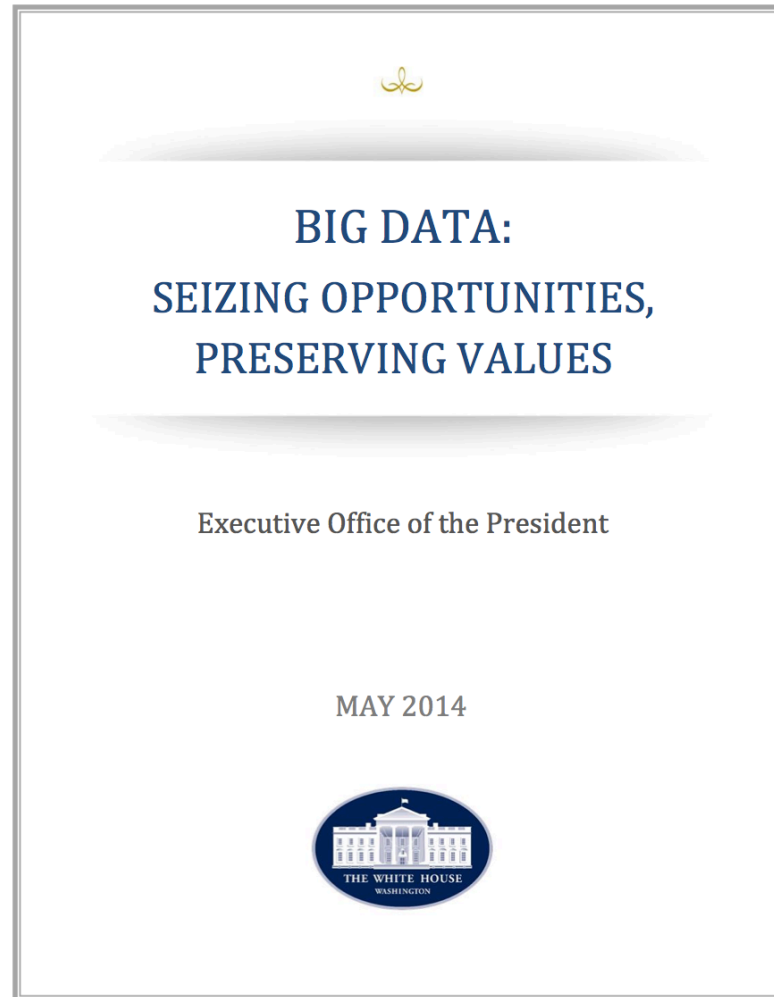
2. Ensure Fairness in Automated Decisions.

3. Preserve Constitutional Principles.

4. Enhance Individual Control of Personal Information.

5. Protect People from Inaccurate Data.

# White House Big Data Report

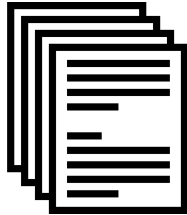


[HTTP://WWW.WHITEHOUSE.GOV/BIGDATA](http://www.whitehouse.gov/bigdata)



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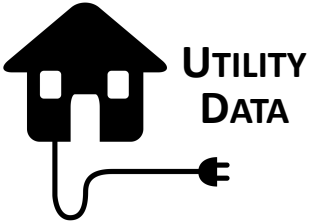


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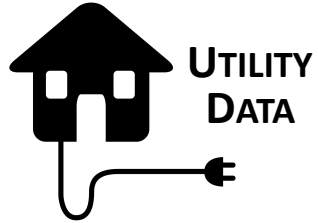


## UNDERWRITING

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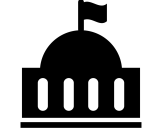
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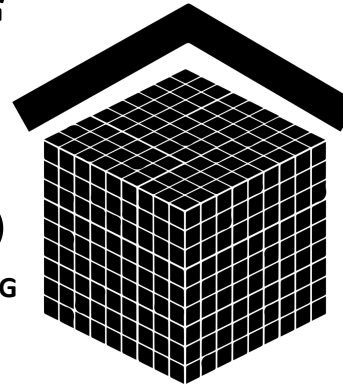
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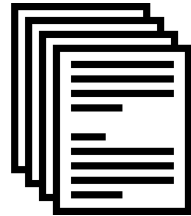
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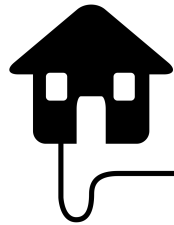
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UTILITY  
DATA

## MARKETING



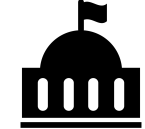
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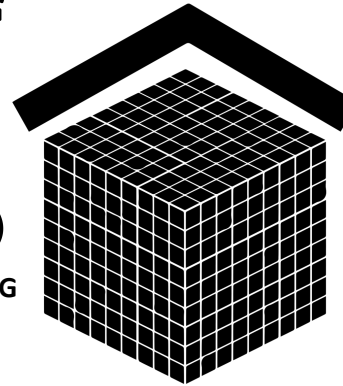
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DATA BROKERS



*BARELY*  
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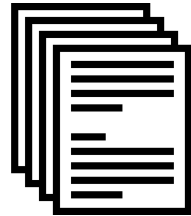
MARKETING SCORES



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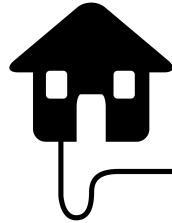
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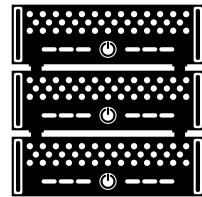
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UTILITY  
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"ALL DATA IS  
CREDIT DATA"

## MARKETING



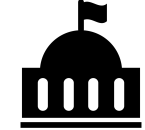
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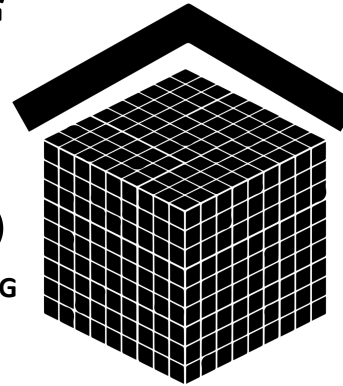
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DATA BROKERS



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MARKETING SCORES

# QUESTIONS?

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# II. Other Online Profiling/Data Collection Practices



NCLC Big Data and Racial Justice Webinar  
on 3 June 2014, Ed Mierzwinski, U.S. PIRG

**As the New York Times explained, PIRG/CDD uncovered use of invisible to consumer E-Scores, predictive financial algorithms and other scoring products, with impact on all—but esp. low income consumers.**

### Secret E-Scores Chart Consumers' Buying Power



Tim Gruber for The New York Times

Gordy Meyer, chief executive of eBureau, in its data processing center. EBureau calculates consumers' buying-power scores, which take into account details like occupation, salary, home value and spending patterns.

By NATASHA SINGER  
Published: August 18, 2012

ST. CLOUD, Minn.

**Related**  
You for Sale: AMERICANS are obsessed with their scores. Credit scores.

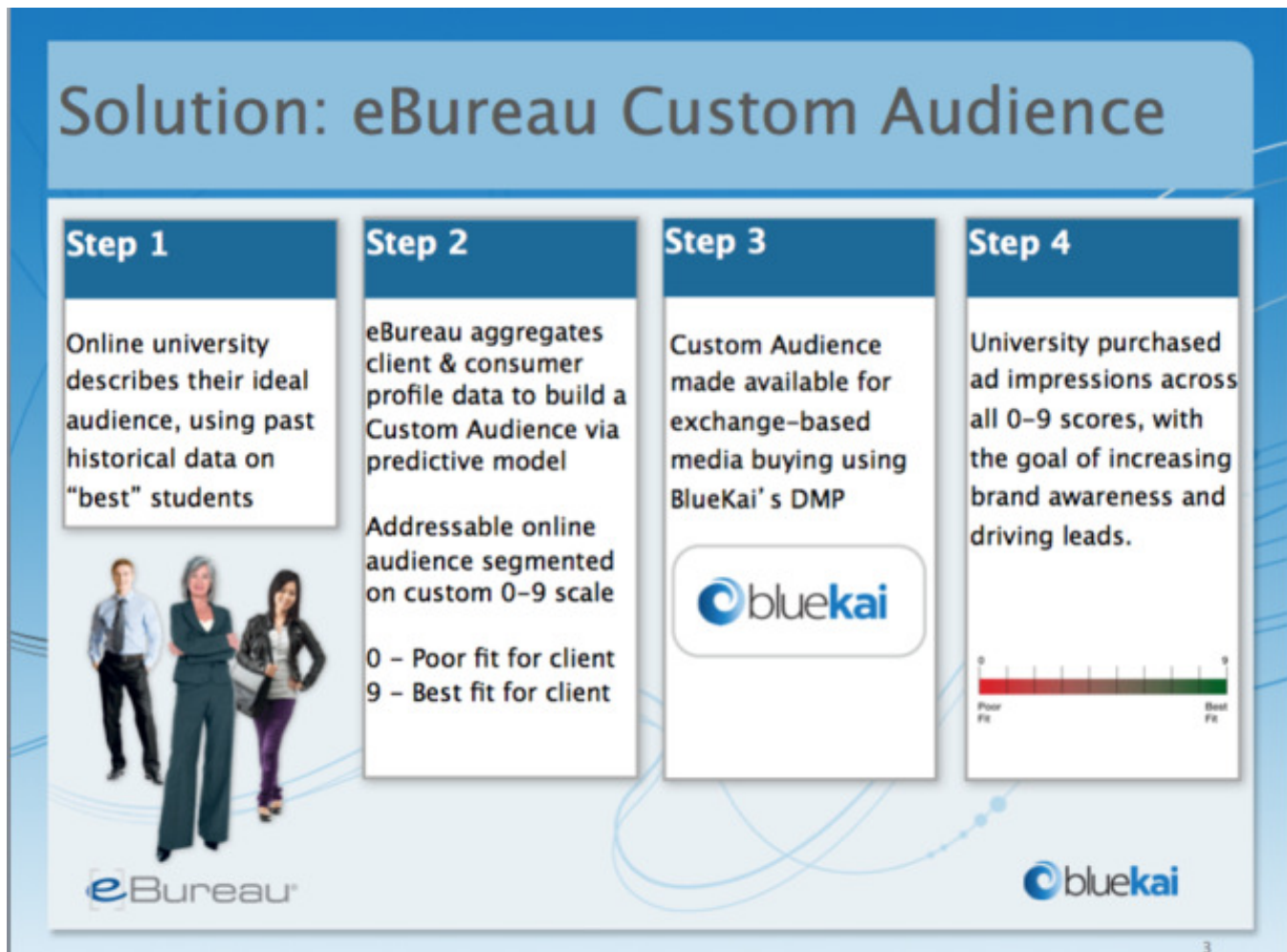
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**“These digital scores, known broadly as consumer valuation or buying-power scores, measure our potential value as customers. What’s your e-score? You’ll probably never know. ...**

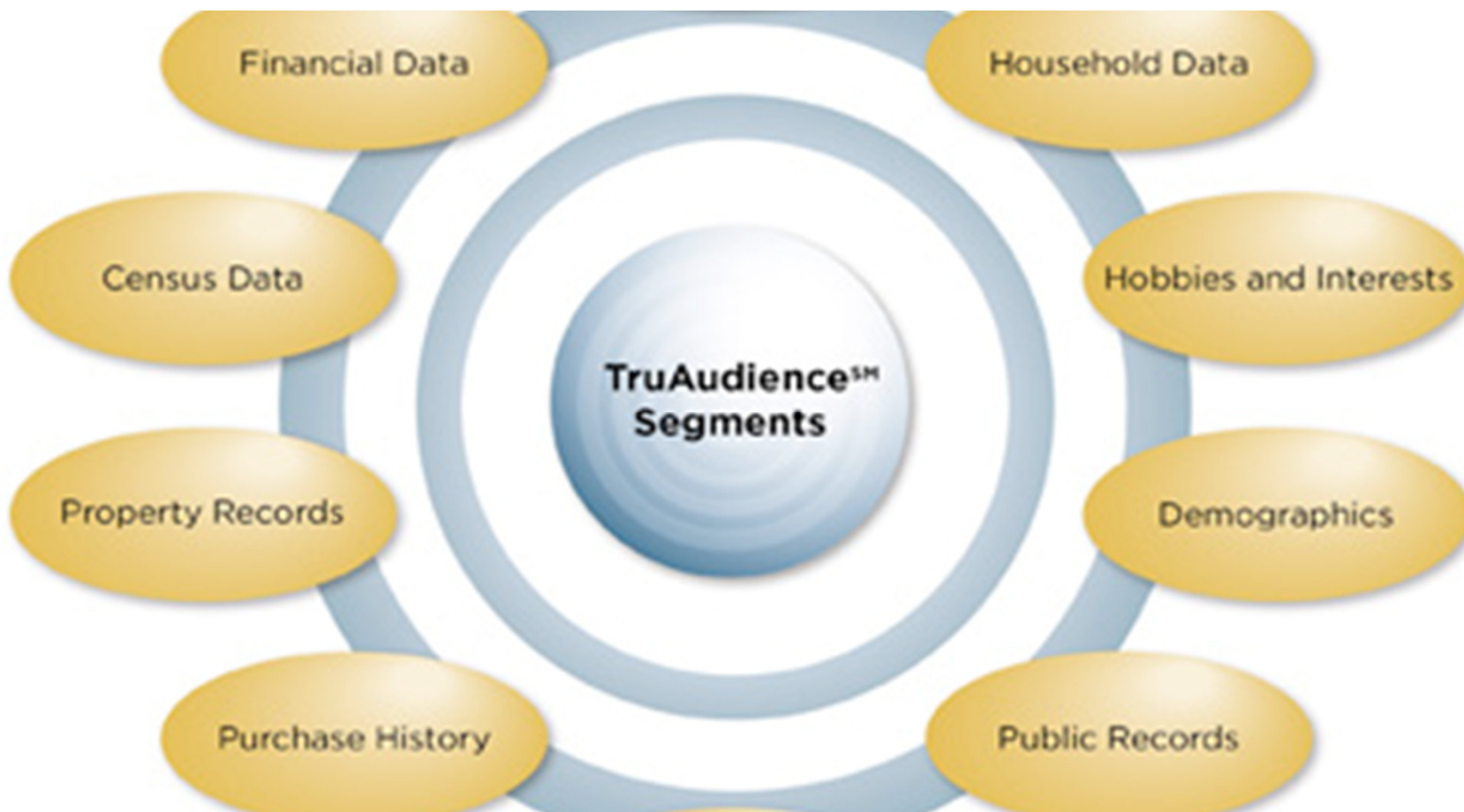
**... The result is a private, digital ranking of American society unlike anything that has come before.”**



**Example: eBureau's score product for an online for-profit university. Invisible, non-transparent, unaccountable. Such scores can be used to determine pricing, including discriminatory pricing.**



**Digital E-Scores can be used to determine pricing or service; or even whether you are offered a product at all.**



These powerful new capabilities have tremendous impact on consumers, esp. low-income/at risk or vulnerable populations. Data can be used to manipulate choices or offers or pricing structures



DATA SHEET

## Ideal Audience: Underbanked Consumers

### Overview

TruSignal's Underbanked Consumer Ideal Audience includes people who have similar characteristics of consumers who maintain nontraditional banking relationships. This segment is valuable for advertisers looking to reach consumers using money transfer services, applying for short term loans or prepaid debit card products through online channels.

### Built Using Real World Performance Data

TruSignal Ideal Audiences go beyond rudimentary demographics or pre-canned segments. By analyzing underbanked consumers with TruSignal's massive store of third party data, we discovered a proprietary formula of 127 predictors. Together, these data attributes detect which consumers are likely to use money transfer services, short term loans and prepaid debit card products. We used this audience formula to profile more than 100,000,000 US adult consumers, giving you all of the power and precision of many datasets distilled into a single, targetable audience.

### Top Predictive Factors:

- Length at residence
- Estimated home value
- Not owner occupied residence
- Musical tastes
- Financial strength

# Dynamic Pricing Based On E-Scores: Fair or Unfair?



- **FTC Data Broker Report: May 2014:** “the scoring processes used in some marketing products are not transparent ... consumers are unable to take actions that might mitigate the negative effects of lower scores, such as being limited to ads for subprime credit or receiving different levels of service from companies.”
- **Professor Joseph Turow, “The Daily You”, 2012:** “Turow describes how our personal "reputations" related to our identity are being constructed by others--all out of the control of the individual. Some of us are regarded, he explains, as "waste"--because our incomes or life conditions may not make some marketer the profit they desire. We are secretly being labeled by others with various digital "scarlet letters" symbolizing our worth to the commercial marketplace (and the political one as well).”
- **Turow, “Niche Envy,” 2010:** Merchants consider the online environment particularly ripe for such “*dynamic pricing*” —that is, for *price discrimination* driven by behavioral targeting.

## **Regulatory Oversight of Insurers' Use of Big Data:**

Existing risk class regulation based on old old school big data, where regulators have oversight of all factors going into pricing and the data underlying the risk class analysis of rating factors and relativities. Big data use goes beyond pricing to marketing, claims settlement, conditioning payment plans and more

Today, regulators simply do not have the resources to monitor all the databases and scoring models used by insurers nor access to the data underlying these new models.

If it is unrealistic to expect regulators to provide the type of historical review of advisory loss costs to new pricing tools, what is the way forward?

## **Regulatory Oversight of Insurers' Use of Big Data:**

The current approach of allowing insurers to use any factor they want unless specifically prohibited does not fit with current data availability and technology. Regulators and legislators need to consider an approach of pro-actively identifying permissible risk classifications based not only on actuarial considerations, but also public policy goals of loss mitigation and availability.

Step 1. Each state should require insurers to report all types of data used for sales, marketing, underwriting, pricing and claims settlement, the sources of the data and the uses of the data.

Step 2. The regulatory framework should shift from use anything unless specifically prohibited to regulatory review prior to use to ensure basic consumer protections are in place and data use is consistent with public policy goals of insurance.

## **Regulatory Oversight of Insurers' Use of Big Data:**

Step 3. Regulators and Legislators should establish public policy that loss mitigation should be a consideration in approving a risk classification. Avoid black box models that rob system of loss mitigation – encourage telematics to provide feedback to consumers to modify behavior in real time as opposed to simply another opaque pricing factor.

## Step 4. Regulatory Big Data for Monitoring Market Outcomes

If regulators' ability to monitor what goes into marketing, sales, pricing and claims practices is realistically limited, then monitoring market outcomes is essential:

- Who is offered what insurance products at what prices in what locations?
- How are different groups of consumers treated in claims settlement?

***Regulatory Big Data as a tool and strategy to improve effectiveness, efficiency and uniformity of state-based insurance market regulation.***



## Regulatory Big Data Already Used/Planned By State Insurance and Other Financial Regulators:

- Home Mortgage Disclosure Act data on individual mortgage applications by state and federal banking regulators
- Statutory Annual Statement data on individual bonds and investments by insurance prudential regulators
- PBR Transaction data on life insurance, disability insurance, long-term care insurance and annuities by insurance regulators as part of principles-based reserving.
- FINRA Comprehensive Automated Risk Data System (CARDS)
  - data relating to securities and account transactions, holdings, account profile information (excluding personally-identifiable information and securities reference data.