CENTER for ECONOMIC JUSTICE | FAIR ACCESS FAIR TREATMENT

IRES Career Development Seminar 2017

Accelerated Underwriting in Life Insurance

Birny Birnbaum
Center for Economic Justice

August 15, 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

Why CEJ Works on Insurance Issues

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

CEJ works to ensure ***fair access*** and ***fair treatment*** for insurance consumers, 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.

How Insurance Is 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. **Cost-based pricing is required and consumer challenges to prices are prohibited.** The requirement for cost-based pricing is to protect insurer financial condition and prevent intentional or unintentional unfair discrimination
4. **There is Profound Public Interest in Broad Coverage** – failure or inability of consumers and businesses to access insurance has implications not just for individual families and businesses, but for taxpayers, communities and the nation.

Big Data Defined

Insurers' use of Big Data has transformed the way they do marketing, pricing, claims settlement and their approach to risk management. For purposes of my talk, 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. Coupled with the increased volume and granularity of data is the digital technology to generate, access, process, analyze and deploy big data algorithms in real time

What's So Big About Big Data?

1. Insurers' use of Big Data has huge potential to benefit consumers and insurers by transforming the insurer-consumer relationship and by discovering new insights into and creating new tools for loss mitigation.

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

3. The current insurance regulatory framework generally does not provide regulators 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 regulators.

4. 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.

5. Regulators and policymakers must understand the economic and competitive implications of Big Data on insurance. Without public policy action, captive markets will no longer be limited to add-on products markets like credit-related insurance. Other insurance markets – whether personal or commercial lines – will become captive markets where control over access is with the data vendors and algorithms describing and scoring the individual consumer or business.

6. The insurance industry and insurance regulatory systems are at a crossroad. **One possible future is empowered consumers and businesses partnering with risk management and sustainability companies who also provide insurance.**

   Another choice is a small set of insurers, data brokers and consulting firms who control access to insurance through opaque algorithms.

Big Data Algorithms as Insurance Market Gatekeepers

- Marketing: web searches and web advertising that pre-score and channel consumers to particular products, providers and price-levels.

- Pricing: pre-fill applications and pricing without the consumer providing information, pricing based not just on risk but on price optimization / consumer demand models, real-time competitive options and/or socio-economic characteristics

- Claims: automated, instant claim settlement proposals based on data generated by a vehicle, home telematics or wearable device and utilizing price optimization/consumer demand models to determine amount of claim settlement offer a particular consumer is likely to accept based on his or her personal data.

- Common characteristics – opaque algorithms, little or no disclosure or transparency to consumer, great potential to penalize most vulnerable consumers, limiting loss mitigation role of insurance

Big Data Algorithms Can Reflect and Perpetuate Historical Inequities

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

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.

A computer algorithm reflects historical biases of the data and the developers.

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."

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,
- FireLine Rating
- Accelerated Life Insurance Underwriting

Claims:

- Fraud Scores,
- Severity Scores
- Telematics

With apologies to the AAA . . .

Simplified Issue and Accelerated Underwriting

Mary Bahna-Nolan, MAAA, FSA, CERA

Chairperson, Joint AAA Life Experience Committee and SOA Preferred Mortality Project Oversight Group ("Joint Committee")

SOCIETY OF ACTUARIES

AMERICAN ACADEMY of ACTUARIES
Objective. Independent. Effective.™

What is Accelerated Underwriting (AUW)?

SOCIETY OF ACTUARIES

AMERICAN ACADEMY of ACTUARIES
Objective. Independent. Effective.™

AMERICAN ACADEMY OF ACTUARIES

What is Accelerated Underwriting (AUW)?

- **Working definition*:** AUW is a process that is dynamic in that non-medical and medical information gathering may be customized to the individual applicant.
  - The information gathered on two applicants for the same product, at the same face amounts, and for the same gender, age, and smoking status may be different
  - The impact on the retail premium is not expected to be significantly different from impact of traditional fully underwritten processes as we know them today
  - To achieve this dual goal the approach may involve:
    1. Reliance on traditional and non-traditional sources of information
    2. The use of predictive models that quickly interpret available information
    3. Parse the applications into cases that can be rated through non-traditional methods alone and cases that have to go through traditional underwriting

* Formal AUW definition currently being worked on by the SI and AUW Work Group

The result of AUW processes is to "right-size" the underwriting with a less invasive underwriting approach and faster time from application to issue for certain applicants with higher likelihood that collection of additional information would not change the underwriting decision.

AMERICAN ACADEMY OF ACTUARIES

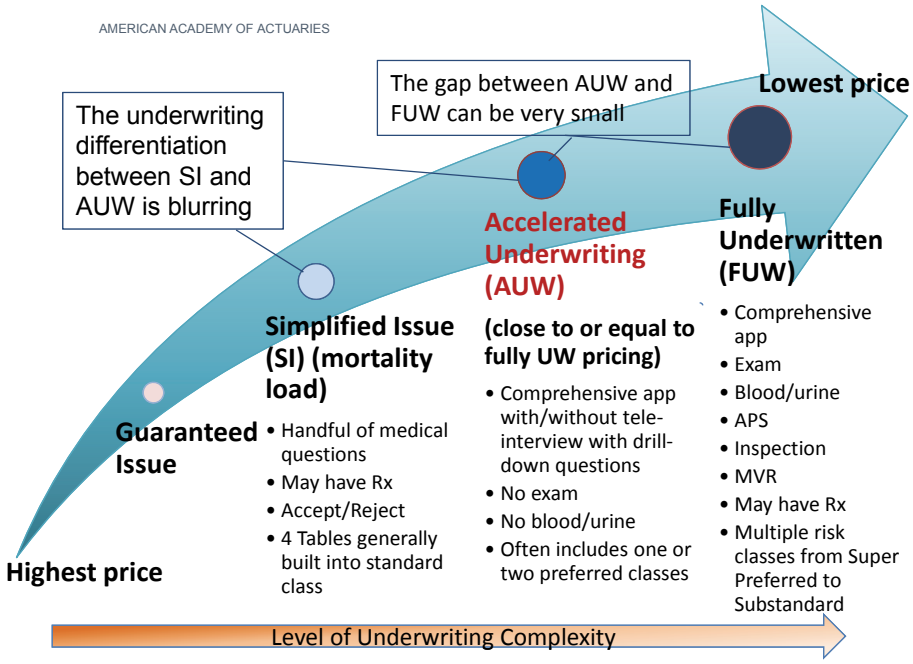
Identifying AUW

- AUW may look like an expanded simplified issue process but with mortality that aligns more closely with fully underwritten business
- AUW is often modeled using predictive modeling and complex algorithms
- May include
  - Traditional underwriting sources collected through different means such as MIB, MVR, criminal history, Rx data, electronic lab data, and health records; and
  - Expanded application and tele-interview process
  - Non-traditional data such as clinical lab data, credit profiles, facial analytics, etc.
  - In many cases, exclude fluids (blood/urine) for cases that qualify

SOCIETY OF ACTUARIES

AMERICAN ACADEMY of ACTUARIES
Objective. Independent. Effective.™

AMERICAN ACADEMY OF ACTUARIES



PAGE 5

The separation between traditional simplified issue (SI) and fully underwritten (FUW) is blurring with accelerated underwriting (AUW) and removal of blood and urine

AMERICAN ACADEMY OF ACTUARIES

Measuring the impact of AUW regimes

- AUW approaches are not homogenous and have different mortality impact expectations
  - Expected mortality differences by class typically range from small expected impact to in excess of 10%
  - Most result in shifting of mix of business between standard and preferred classes

SOCIETY OF ACTUARIES

AMERICAN ACADEMY of ACTUARIES
Objective. Independent. Effective.™

PAGE 6

AMERICAN ACADEMY OF ACTUARIES

Innovation and disruption in underwriting is driven by several factors: New data sources, predictive models and analytics

Computational tools to analyze and develop sophisticated predictive models

Steady increase in availability and usefulness of instantly accessible data sources

- Majority of applicants through age 55 or 60 can be fully underwritten towards 'Standard Mortality,' including preferred, without exam/fluids, using combinations of alternate information sources. This can be achieved by:
  1. Knowing and appreciating the degree and power of appropriate pipeline selection; and
  2. Carefully stratifying applicants suitable for 'no fluid' selection by using other favorable parameters that can be obtained non-intrusively (Rx check, MIB, MVR, credit profiles, enhanced application, detailed questioning, etc.)
- Use of other data sources, smarter applications, and tele-interviews are replacing the traditional underwriting process for certain ages and face amounts

New data sources include:

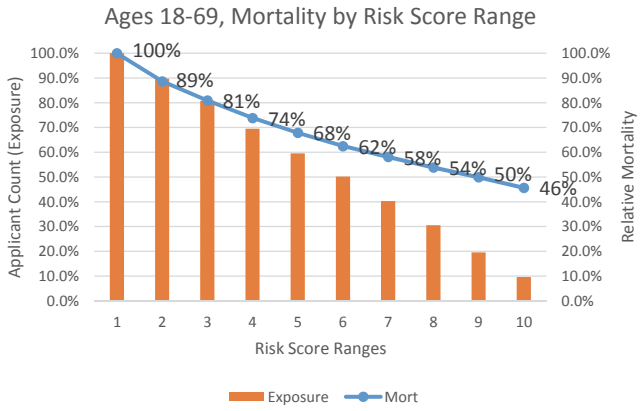
- Enhanced applications with use of behavioral economics
- Predictive models
- Credit profiles
- Electronic Health Records
- Electronic Clinical Lab Records
- Smoker propensity
- APS Summaries
- Applicant candor
- Use of wearable devices
- Facial analytics
- Criminal history
- Other emerging technologies

SOCIETY OF ACTUARIES

AMERICAN ACADEMY of ACTUARIES
Objective. Independent. Effective.™

AMERICAN ACADEMY OF ACTUARIES

Use of risk scores via single or combined data sources becoming common in AUW programs



Underwriting towards any desired level.

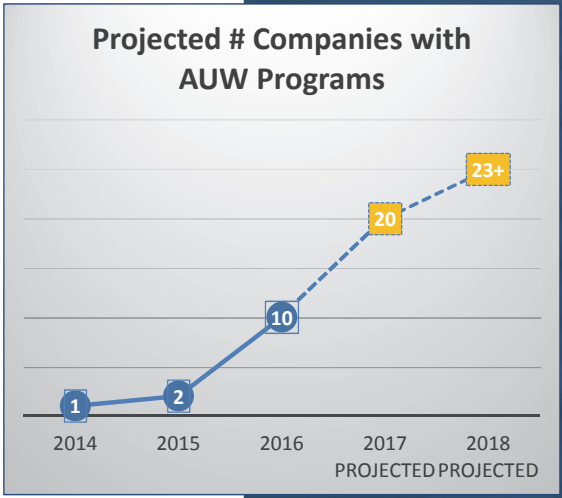
Unlike legacy UW approaches, selection by Risk Score can be finely tailored towards a specific target across a wide range of possible scenarios.

As less favorable risks (by score) are 'removed' from the group, the mortality of the remaining applicants improves in predictable fashion.

AMERICAN ACADEMY OF ACTUARIES

Number of companies with AUW programs is increasing at a rapid rate

- In 2014, one major plan introduced AUW for fully underwritten products
- In 2016 and 2017, significant increase in the number of companies with AUW programs
- SOA survey conducted in 2016
  - Results of 27 respondents currently being compiled
    - 10 have implemented in some form;
    - 10 working on implementing;
    - 3 currently evaluating



Source: Society of Actuaries 2016 Predictive Analytics and Accelerated & Enhanced Underwriting Survey Preliminary Results and SCOR Global Life internal research

AMERICAN ACADEMY OF ACTUARIES

Company motivations and approach to AUW varies and often drives structure of program

Motivations for change	Approaches vary
• Attract new customers	• Knock-out
• Aging underwriter force	• Triage
• Aging distribution network	• Parse
• Reduce expenses	• Predictive decision model
• Improve the customer experience	• Most utilize Rx rules engine
• Improve risk selection and add consistency	• Underwriter may review all cases
	• Some limit classes
	• Most limit and face amount
	• Some require tele-med on all cases and revised application

AMERICAN ACADEMY OF ACTUARIES

A single table or approach is difficult for SI/AUW products

- Mortality outcome for any underwriting regime is a factor of many selection levers
- All levers need to be considered
- For these reasons, two seemingly similar programs may not result in a similar mortality outcome

- Key determinants to mortality outcome include:
  - Application structure
  - Target market
  - Distribution method
  - Individual selection criteria
  - Claims adjudication policies
  - Program management

AMERICAN ACADEMY OF ACTUARIES

The Accelerated Underwriting Challenge

SOCIETY OF ACTUARIES

AMERICAN ACADEMY of ACTUARIES
Objective. Independent. Effective.™

AMERICAN ACADEMY OF ACTUARIES

Upcoming challenges with emerging changes

- Deterministic valuation under VM-20
  - Most SI and some GI business issued as level premium term;
  - AUW business issued both term, UL, WL, and ULSG
  - Prescribed method does not fully contemplate GI/SI business or the blurring between traditional SI business, accelerated underwriting and fully underwritten
  - RR Tool does not apply for underwriting without fluids nor consider new data sources
  - Acceptable support for use of new data sources, mortality credibility, etc.
  - Nonforfeiture and tax implications with blurring definitions for underwriting regimes

AMERICAN ACADEMY OF ACTUARIES

Upcoming challenges with emerging changes (cont'd)

- Mandatory data collection under VM-51
  - Need different data than traditional to differentiate and understand programs and expected mortality outcomes as underwriting becomes less homogenous
  - Need definitions as SI/GI not currently part of mandatory data collection
  - Frequent program modifications and refinements to predictive models in order to achieve desired mortality outcomes will create additional noise in the experience analysis and will be difficult to measure

Current Regulatory Framework Challenged in Era of Big Data

Old, Old School Big Data and The Current Regulatory Framework:

- Oversight of Statistical Plans and Data Collection
- Licensing and Oversight of Advisory Organization Providing Pricing Assistance to Insurers
- Filings and Statistical Data Contain and Reference Everything Insurers Use for Pricing
- Complete Transparency to Regulators

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, Limited Transparency to Regulators, No Transparency to Consumers

Current Regulatory Framework Challenged in Era of Big Data

- Insurers now using data not subject to regulatory oversight or the consumer protections of the FCRA. Regulators 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.

Insurer Use of Big Data Scoring Models Lack Fundamental Consumer Protections

- 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
- Regulators' Knowledge Of and Capability to Provide meaningful Oversight
- Prevent discrimination Against Low-Income and Minority Consumers and other protected classes
- Asymmetric Use of Data
- Greater Cybersecurity Danger for Consumers and Insurers

NAIC Action on Accelerated Underwriting Occuring at Life Actuarial Task Force

Maybe at Big Data Working Group in the Future

- Application of PBR to AUW
- Data Collection Related to AUW, Draft Out for Comment
- Discussion of Factors Used in AUW