

The banner features a blue background with a pattern of white stars. On the left, there is a vertical strip showing the dome of the U.S. Capitol building. The text is centered in white, with the year '2016' in a large, light blue font on the right side.

AMERICAN ACADEMY *of* ACTUARIES Annual Meeting and Public Policy Forum

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The Genetic Connection—Ethical Considerations of Life Underwriting

November 3, 2016

Randall A. Stevenson, MAAA, ASA, MSc – Hause Actuarial

Stacy Gill - MIB Group

Brenda Cude, PhD – University of Georgia

Leslie Jones, MAAA, ASA – Risk & Regulatory Consulting

Disclaimer

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- Xavier Onassis, Esq.

The Issues

- Advances in Technology
 - Genetics
 - Social Media
 - Consumer Behaviors
 - Data Mining
 - Computational Resources
- Availability of Usable Information
 - Transitioning from Information Age to Conceptual Age
 - Life Settlements
 - Companies
 - Consumers
 - Regulators
- Communication
- Fairness vs. Advantage

Companies' Perspectives

- What do we have the ability to do?
- What information is available to potential insureds, and can they use it to anti-select?
- How do we remain competitive?
- How do we handle consumer information?
- How do we best communicate information to consumers?

Stacy Gill – Executive Vice President of MIB Group

Consumers' Perspectives

- What are companies doing with our information?
- How is my privacy being handled?
- What do I have right to know?
- What do I want to know?
- Am I being unfairly discriminated against?

Brenda Cude – NAIC funded Consumer Advocate and
Director of University of Georgia Center on Economic Education

Regulators' Perspectives

- How do we protect consumers from discrimination?
 - Does a new underwriting practice?
- How do we protect the solvency of companies?
 - Anti-selection by consumers
 - Cost of litigation
- How do we ensure a level playing field in the industry?
- How do we enforce current laws?
- What changes are needed in the laws?

Leslie Jones – Former Chief Life & Health Actuary for SC and now providing regulatory consulting services through RRC

References

- Chapter 1 of Ethical Data Mining Applications for Socio-Economic Development, Hakikur Rahman & Isabel Ramos, University of Minho, Portugal
<http://philpapers.org/archive/CHREIO.pdf>
- “Understanding Insurance Anti-Discrimination Laws,” Ronen Avraham, University of Texas at Austin; Kyle D. Logue, University of Michigan Law School; & Daniel Benjamin Schwartz, University of Minnesota Law School
http://repository.law.umich.edu/cgi/viewcontent.cgi?article=1163&context=law_econ_current
- ASOPs
 - 12 – Risk Classification (for all Insurance Areas)
 - 23 – Data Quality
 - 45 – The Use of Health Status Based Risk Adjustment Methodologies
 - Exposure Draft – Principle-Based Reserves for Life Products



Ethics in Underwriting

American Academy of Actuaries
November 3, 2016

Stacy Gill



Ethics in Underwriting

- Focus on Life Insurance
 - “Once-and-done” underwriting (vs. annually renewable auto, homeowners, etc.)
 - Strong effects of information asymmetry
- Underwriting definition
 - Risk assessment for the purpose of creating a contingent contract
 - Evaluate an insured’s risk of death, disability, etc.
 - Define requirements that account for information asymmetry and moral hazard
 - Follow a standard, repeatable process for a high degree of consistency
 - Process must deliver equitable treatment of applicants
- The relationship between underwriting and actuarial
 - Actuarial prices risk subject to various factors
 - Underwriting performs the operational implementation of such pricing

Ethics in Underwriting

- Traditionally, all risk selection factors must have acceptable body of research to support their significance in the underwriting process
 - Strict controls around underwriting that might create disparate impact on consumers from the standpoint of Race, Religion, National Origin
 - Underwriting insurance, credit
 - Underwriting guidelines adopted by insurers are intended to provide consistent underwriting and achievement of mortality/morbidity results projected by pricing actuaries.

MIB Background

Purpose

- Compare information at time of current underwriting episode with data from prior episodes; identify potential misrepresentation or omission in current U/W episode

Process

- Company submits inquiry to MIB database at beginning of U/W episode
- Company submits relevant data at close of U/W episode in a brief coded report

Controls

- Fair Credit Reporting and NAIC Model Insurance Information & Privacy Protection Act (17 states)
 - Authorized by consumer, subject to consumer right of access and correction
- Alert only; material results require confirmation prior to adverse underwriting action

Insurance underwriting versus public health mortality analysis

Things that predict mortality/longevity – traditional (partial list) –

- Gender
- Age
- Tobacco use
- Build & blood pressure
- Rx history
- Medical history
 - Hx – Cardio-Vascular disorders/disease
 - Hx – Diabetes
 - Hx – Cancer
 - Hx – many other conditions
- Family history
- Driving history
- Avocation/ Lifestyle
- Income
- Education
- Occupation
- *Race/ethnicity*
- *Geography*

Most are important from a public health standpoint; many are important from an actuarial standpoint. Significant sensitivities for some elements from an underwriting standpoint.

Emerging Factors

Things that predict mortality/longevity – non-traditional

- Genetic predispositions to disease, etc.
- Data derived from wearables (e.g., Fitbit)
- Pets
- Credit Score
- Purchase history
- Buying behavior/ browsing behavior/ other consumer behavior
- Social media profile?
- Black box models that predict mortality based on the foregoing inputs (and other factors)
- **Co-morbidities and confounding factors always create certain challenges**
- **Ascertaining data from third parties indeed pertains to applicant creates audit challenges**

Emerging Factors

Genetic mutations can be influential to longevity, but not deterministic (mostly)

- Example - Breast Cancer
 - 12% lifetime likelihood for all females
 - 55-65% lifetime likelihood if BRCA1 mutation present
- Example - Ovarian Cancer
 - 1.3% lifetime likelihood for all females
 - 39% lifetime likelihood if BRCA1 mutation present
- Example - Huntington's Disease
 - Disease prevalence is ~50 per 1M in US
 - 100% lifetime likelihood if so-called HD gene is present with 36+ glutamine residues

The Case of Genetics

to Test or not to Test?

- Not aware of any companies requiring a genetic test
- Aware of some actual or proposed Part 2 questions: has applicant had a genetic test prior to application?
 - Tele-interview follow-up questioning
 - Must address anti-selection
- Analogue to blood tests of 1980s is somewhat weak
 - Antibodies and blood counts/concentrations count as “proof”
 - HIV
 - Cotinine
 - Fasting glucose
- Epigenetics – the newest frontier

Underwriting Models – Lightning Round

The case For

- Can be automated for speed: yields throughput, scale, and consistent application
- Unmanned – therefore cheaper and better time service than traditional requirements and process
- Can use model building techniques to perform variable/dimensional reduction without sacrificing power
- Removal of human element reduces transactional bias and undue influence
- Can often be tuned for set point as to stochastic error rates and types
- Workflows can reflexively adjust to gather more requirements for suspect/complex cases

Underwriting Models – Lightning Round

The case Against

- Hard/ impossible to deconstruct and understand for consumers and field force
- Black box can inhibit trust and create audit difficulties
- Potential for de facto *disparate impact*; limited ability to adjust without including “toxic” data elements within model build and transactional workflow
- “Right of appeal” can be problematic to develop and administer
- Non-transparent use of FCRA – vs – non-FCRA governed data can cause compliance concerns
- Data quality and veracity can be problematic

Underwriting Models – Lightning Round

Extra credit

1

Constraints on market identification and segmentation are different than those on underwriting. Use of modeling with Non-FCRA data for non-underwriting processes can be less problematic

2

Know thy data sources

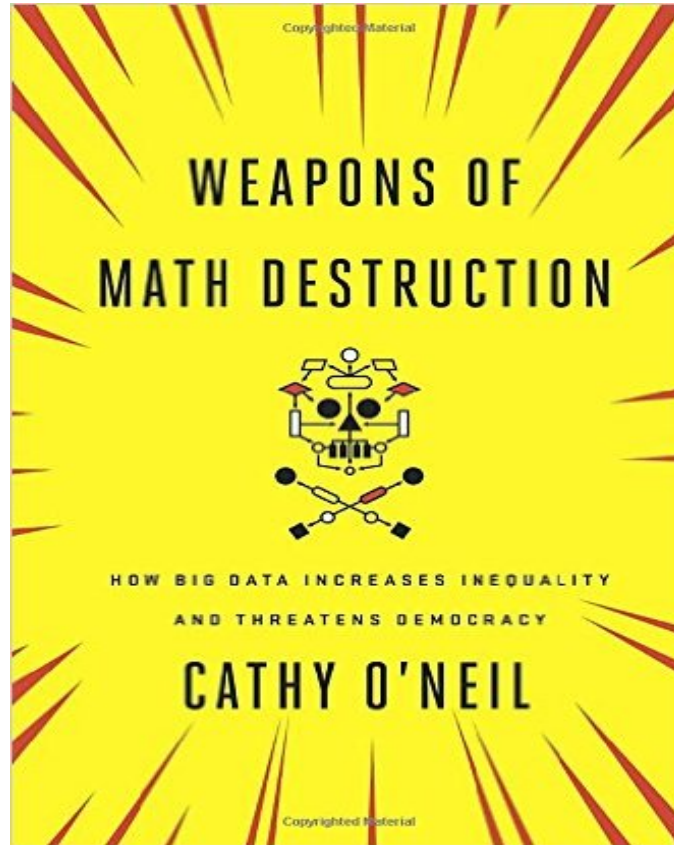
Regulatory/ Legal Landscape

- Genetics – Federal law prohibits use of genetic information in employment screening and underwriting health insurance.
- Certain states require exceptions to underwriting guidelines and models for certain classes of consumers:
 - NY – No debits allowed for breast cancer survivors after 3 years
 - Other states – No debits for blindness, mental retardation, victims of domestic violence, etc.
- Credit – Law is somewhat unsettled – In 2003 Allstate defended against a suit for disparate impact which claimed that use of credit scores in an underwriting engine for homeowners insurance unfairly raised premiums for African-Americans. Lower court found for plaintiffs, Supreme Court declined to hear the case; Allstate settled.
- McCarron-Ferguson offers no shield from federal law governing unfair discrimination

Bottom Line Recommendations – Ethical Underwriting with Genetics, Models, Big Data

- Be super-careful underwriting life insurance with genetic information – the overwhelming majority of genetically based disease states are expressed probabilistically and are poorly understood actuarially.
- Consistency and reproducibility are necessary but alone are not sufficient
- Specificity, non-disparate impact with regard to protected and non-protected classes, feedback, transparency, disclosure and dispute are all crucial.
- Specificity and non-disparate impact – maximize precision with respect to consumer identity and individual risk factors, minimize use of statistical proxies
- Feedback Loop – tie model decisions to real-world underwriting experience; update models to reflect changes
- Transparency, disclosure and dispute – Consumer-facing measures to ensure compliance with FCRA, ensure field force buy-in to modeled underwriting outcomes and decisions.
- No one is average – risk selection still requires judgment.

Recommended Reading



Consumers' Perspectives

Brenda J. Cude, University of Georgia



The Privacy Concern

- Accessibility privacy
 - Freedom from intrusion
- Decisional privacy
 - Freedom from interference in personal choices
- Informational privacy
 - Ability to restrict access to and control the flow of his/her own personal information

Source: Christen, Alfano, Bangerter, Lapsley, 2013

Why U.S. Consumers Can't Be Expected to Protect Their Own Privacy

- Lack of information about what's at stake (the benefits) to make a cost-benefit determination
- Lack of good shortcuts that estimate the value of protecting our privacy
- Inability to determine who violated my privacy and seek restitution
- Privacy may be important, but it shouldn't always be **the** most important factor



Consumers Likely View Privacy Differently

Information I know others know

- Age
- Address
- Memberships
- Homeowner

Information I know but don't think others know or would reveal

- Medical conditions
- Financial information

Information I don't know

- Genetic condition

What Is the Industry's Obligation?

- Avoidance of harm
 - Prospective parents who forgo genetic testing
 - Individuals don't apply because of genetic condition
- Information justice and non-discrimination
 - “Group” profiling where data patterns suggest new associations about people which may or may not be true
 - Target identified “pregnant” woman based on purchasing patterns
 - Self-driving cars that report potholes – but only in neighborhoods where those cars are driven

Source: Christen, Alfano, Bangerter, Lapsley, 2013

What Is the Industry's Obligation?

- Respect for Autonomy
 - Capacity to present ourselves in a way that fits our self-understanding
 - Respect for autonomy means controlling the capacities needed for autonomy
 - Not using information to manipulate
 - Concern for the impact of “tailored content generation” which filters information

Big Data Concerns in Life Insurance

- Transparency
 - E.G., Does the consumer have the opportunity to contest inaccurate data?
- Disparate Impact
 - E.G., Are the data really proxies for prohibited factors? (Appear to be neutral but result in disproportionate impact on protected groups)

Consumer Expectations for Rating Factors

- Intuitive: Consumers understand how factor relates to risk
 - Acceptance
- Relationship to Cost: Consumers understand how this characteristic or behavior makes a difference in cost
 - Behavior change (But characteristics?)
- Transparency: Consumers understand what information is considered
 - Trust

Regulatory Perspective

Leslie M. Jones, Risk & Regulatory
Consulting, LLC



Overview

- Regulatory Role
- Existing Regulatory Framework
- Applicable Actuarial Standards of Practice
- Criteria Necessary for Success in Risk Classification
- Evolving Practices in Life Insurance Underwriting
- The Principle-Based Reserve (PBR) Connection

Regulatory Role

- Consumer Protection
- Insurer Solvency
- Ensuring a Healthy Competitive Insurance Marketplace
- Toolbox
 - Existing Regulatory Framework
 - Education & Outreach
 - Developing/Proposing New Legislation

Existing Regulatory Framework

- General State & Federal Requirements
 - Unfair Trade Practices
 - Nondiscrimination Laws
- Specific State & Federal Requirements
 - Use of Credit Information
 - Use of Genetic Information
- Other Requirements
 - Privacy of Information
 - Product Regulation

NAIC Model Unfair Trade Practices Act

- Allows risk classifications based on sound actuarial principles and related to actual or reasonably anticipated experience.
- Prohibits Unfair Discrimination in Life Insurance: Making or permitting any unfair discrimination between individuals of the same class and equal expectation of life in the rates charged for any life insurance policy or annuity or in the dividends or other benefits payable thereon or in any other of the terms and conditions of such policy.

Restrictions re: Use of Genetic Information

- Genetic Information Nondiscrimination Act of 2008 (GINA)
 - Prohibits health insurers from denying coverage or charging different premiums to insureds based on genetic information
 - Does not apply to life, long-term disability and long-term care insurance
- Affordable Care Act (2010)
- State Legislative Activities
 - State restrictions for Life, LTD and LTC

Applicable Actuarial Standards of Practice (ASOPs)

- ASOP 12 - Risk Classification, ASOP 23 - Data Quality, & ASOP 25 - Credibility Procedures (among others)
- ASOP 12, Risk Classification (a few of the key points)
 - Risk Characteristics Should be Related to Expected Outcomes & Capable of Being Objectively Determined
 - Adverse Selection, Credibility & Practicality Should be Considered
 - Balance Accuracy, Efficiency & Effects of Adverse Selection
 - Test the Risk Classification System

Academy Risk Classification Monograph

3 Necessary Criteria for Success In Risk Classification

- “Coverage is widely available to those who desire it”
- “The terms of coverage are sufficiently acceptable to those eligible to participate”
- “The system will have access to sufficient resources to fulfill its promises” – essentially, product pricing must be adequate to meet the expected cost of coverage

Evolving Practices in Life Insurance Underwriting

- Predictive Scoring
 - Type of Information Collected
 - Black Box
 - Use in triaging, as a primary risk classification tool, or part of a package of underwriting requirements
- Wearable Devices
- Genetic Testing
- Facial Analytics

The Principle-Based Reserve (PBR) Connection

- Use of “prudent estimate mortality assumptions” which may be based on company specific data (with limitations)
- Company experience data may be adjusted to reflect changes in the risk selection and underwriting practices different from those underlying the company experience data. These adjustments are to be supported by published studies that correlate specific risk selection criteria to mortality experience.

Questions?

