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Big Data Challenges to Insurance Market Regulation

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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.

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 and 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.

Current Regulatory Framework Challenged in Era of Big Data 1

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 Almost All Information Insurers Use for Pricing and Claims Settlement
- Complete Transparency to Regulators; Mostly Transparent to Consumers
- Market Regulation Based, Generally, on Auditing Model

Current Regulatory Framework Challenged in Era of Big Data 2

Old School Big Data: Credit-Based Insurance Scores

- Limited Consumer Protections for Completeness and Accuracy of Data via the Fair Credit Reporting Act
- Limited Oversight of Modelers and Models; Failure to Enforce or Amend Advisory Organization Statutes
- Limited Transparency to Regulators, Little or None to Consumers
- Consumer Protections in Name Only
- Failure to Address Disparate Impact
- Regulators' – and the Public's – Lack of Data for Evaluation of Scoring Models and their Impact on Affordability and Availability Exposed

Current Regulatory Framework Challenged in Era of Big Data 3

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,
- Little or No Transparency to Regulators, None to Consumers
- Problems That Emerged with Credit Scoring Grow
    - o Lack of Data to Monitor Market Outcomes
    - o Lack of Oversight of Collective Pricing Activities
    - o Lack of Tools to Address Disparate Impact
    - o Insurer Opposition to Providing Data
    - o Big Data Issues with Anti-Fraud and Claim Settlement

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 and anti-fraud/claim settlement algorithms can be proxies for protected classes, but with no recognition of disparate impact, risk classifications and algorithms that have the effect of discriminating against protected classes are permitted. Big Data amplifies this problem.

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.

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.

3. **Consumers have little or no information about the insurers' performance.**

4. **Cost-based pricing is required by actuarial standards of practice and financial solvency.** The requirement for cost-based pricing is to protect insurer financial condition and prevent intentional or unintentional unfair discrimination

5. **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.

Modernizing Insurance Market Regulation

1. Articulate What the Future of Insurance Should Look Like.

"Before we choose our tools and techniques, we must first choose our dreams and our values, for some technologies serve them while others make them unobtainable." Tom Bender

Our Dreams and Values for Insurance:

Empowered consumers and businesses partnering with risk management and sustainability companies who also provide insurance.

Greater, not less, transparency in insurance pricing, sales and claims settlements.

The Needed Shift in the Insurance Market Regulation Paradigm

The current regulatory paradigm is that, by monitoring all of the inputs into insurer marketing, pricing and claims settlement practices, regulators can ensure good consumer outcomes. While it is debatable whether the "good inputs ensure good outcomes" is a reliable approach to consumer protection, it is simply no longer feasible for regulators to monitor the massive increase in volume and complexity of inputs to insurer models in an era of Big Data.

The insurance market regulation paradigm needs to shift from attempting to monitor all inputs for insurer pricing and claim settlement to collecting and robustly analyzing data on actual consumer market outcomes. Stated differently, there is a need for **Regulatory Big Data** – massively increased collection of granular insurer transaction data accompanied by regulatory data mining and big data analytics. The regulatory approach must move from an auditing model to an analytics model.

2. **Modernize Insurance Market Regulation.**

    a. Monitor Markets More Comprehensively and Efficiently
    b. Develop Tools and Skills to Analyze Regulatory Big Data
    c. Rules for Consumer Disclosure, Access, Ownership and Protection of Personal Consumer Information Used by Insurers
    d. New Tools to Empower Consumers –
        i. Insurer Performance Data from Actual Consumer Outcomes
        ii. Loss Prevention Partnerships
        iii. Track Record for Protecting Personal Consumer Information
    e. Modernize Oversight of Risk Classification – Ethical Algorithms to Minimize Disparate Impact and Emphasize Loss Prevention

3. **Assist, Not Criminalize, Low-Income Consumers to Obtain Essential Insurance.**

4. **Develop / Improve / Reinvigorate Capabilities for Economic Analysis of Markets, Competition and Anti-Trust.**

2. Modernize Insurance Market Regulation

a. Monitor Market More Comprehensively and Efficiently

i. <u>What data are insurers using for what purposes?</u> Routine collection – and publication – by regulators of the types, sources and uses of data by insurers for marketing, sales, pricing, claims settlement and loss mitigation.

ii. <u>What consumer outcomes are insurers producing?</u> Routine collection and analysis by regulators of granular consumer insurance market outcomes, including transaction-detail data on quotes, sales and claim settlements.

iii. <u>Public data to empower consumers.</u> Routine publication of insurer-specific anonymized consumer market outcomes.

2. Modernize Insurance Market Regulation

b. Develop Skills and Tools to Analyze Regulatory Big Data

i. NAIC resources to assist states with market outcome data collection, management and analysis comparable to NAIC tools for financial regulation and principles-based reserving.

ii. Shift states' market regulation from primarily audit capability to primarily analytic capability by adding statisticians, economists, data scientists and big data modelers.

2. Modernize Insurance Market Regulation

c. Consumer Disclosure, Access, Ownership and Protection Rules for Personal Consumer Information Used by Insurers

i. Insurers' disclosures and consumer protections modeled after those in the Fair Credit Reporting Act – disclosure, consent, adverse action notice, access to data used, opportunity to correct erroneous data, life events exception

ii. Ownership and consumer protections for consumer-generated data related to insurance – ownership by consumers and licensing to insurers of consumer-generated data, disclosure, affirmative opt-in, access, symmetrical use, transferability and standards for all industry databases, uses limited to agreed uses.

2. Modernize Insurance Market Regulation

d. New Tools to Empower Consumers

i. What data about me are you collecting and how well are your protecting my personal information? Insurers' and producers' transparency about and use and protection of consumers' personal information;

ii. What is your actual history of treating consumers? Insurers' and intermediaries' performance based on actual market outcomes for consumers; and

iii. What types of tools and assistance do you offer to help me manage my risk and control my premium? Insurers' and intermediaries' tools and partnerships for loss mitigation, loss prevention and consumer empowerment for risk management to control premium costs

2. Modernize Insurance Market Regulation

e. Modernize Oversight of Risk Classification

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.

Ethical Algorithms:
Minimizing Bias in Insurance Pricing and Claims Settlement Models

Industry Trade Arguments against Disparate Impact in Insurance:

- Insurers don't consider race, religion or national origin, so there can be no unfair discrimination on the basis of these factors.
- Regulators have no authority to consider disparate impact:

Absent discriminatory treatment or failing to match price to the risk, the issue is whether they are even appropriate inquiries to apply to insurance rating. This is especially the case since some states prohibit even asking about the applicant's or policyholder's race or some other protected class status. As a result, the rating for a particular risk is truly color blind.
AIA and NAMIC Comments to NAIC Big Data Working Group, January 26, 2018

Industry Arguments on Disparate Impact Flawed

The industry claim that their algorithms are “color blind” is, of course, nonsense to anyone familiar with algorithms because algorithms can reflect and perpetuate the historical biases of the data and the developers.

Further – if intentional discrimination against protected classes is prohibited, why would we ignore or permit unintentional discrimination that has the same effect be permitted?

Why Is Disparate Impact Relevant for Insurance Pricing?

TransUnion Criminal History Score

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

"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."

What is the likelihood that TU Criminal History Scores have a disparate impact against African-Americans? Consider policing records in Ferguson, Missouri.

US DOJ Investigation of the Ferguson Police Department

Ferguson's approach to law enforcement both reflects and reinforces racial bias, including stereotyping. The harms of Ferguson's police and court practices are borne disproportionately by African Americans, and there is evidence that this is due in part to intentional discrimination on the basis of race.

Ferguson's law enforcement practices overwhelmingly impact African Americans. Data collected by the Ferguson Police Department from 2012 to 2014 shows that African Americans account for 85% of vehicle stops, 90% of citations, and 93% of arrests made by FPD officers, despite comprising only 67% of Ferguson's population.

US DOJ Investigation of the Ferguson Police Department (2)

FPD appears to bring certain offenses almost exclusively against African Americans. For example, from 2011 to 2013, African Americans accounted for 95% of Manner of Walking in Roadway charges, and 94% of all Failure to Comply charges.

Our investigation indicates that this disproportionate burden on African Americans cannot be explained by any difference in the rate at which people of different races violate the law. Rather, our investigation has revealed that these disparities occur, at least in part, because of unlawful bias against and stereotypes about African Americans

Example: Propensity for Fraud

"Unstructured data has become an opportunity instead of a problem. Many insurers have the ability to change unstructured information into structured data and actively mine this for the opportunities available therein."

"This [propensity] modelling is used to determine the likelihood of a new policy holder to commit a fraudulent act and it can be done in real-time … Fraud detection has changed in its location relative to the insured. Insurers are now able to run predictive and entity analytics during multiple touch points, essentially as each new piece of information is added. This not only improves detection capabilities in the event of fraud, but it also allows an insurer to assess a fraud-risk. Some have begun providing risky policy holders with high-priced policies in order to drive them to other service providers."

"The Role of Data and Analytics in Insurance Fraud Detection,"
www.insurancenexus.com, June 2016 (UK)

2. Modernize Insurance Market Regulation

e. Modernize Oversight of Risk Classification

i. Ethical Algorithms: Employ best practices to identify and eliminate disparate impact against protected classes. Commonly used by lenders and used by some insurance service organizations. Practices are consistent with cost-based pricing.

ii. Emphasize Loss Mitigation: Deep commitment to cost-based pricing to ensure proper economic signals for cost of protection and loss mitigation investment. Emphasize risk classifications that empower consumers, prohibit use of socio-economic factors and credit scoring.

iii. Apply Disparate Impact Standard to Insurance: If intentional discrimination against protected classes is prohibited, unintentional discrimination that has the same effect should be prohibited and minimized – see Ethical Algorithms.

Ethical Algorithms: Reasonable and Necessary for Insurance Pricing and Claims Settlement Models

1. Minimizes Disparate Impact – Stop the Cycle of Perpetuating Historical Discrimination.
2. Promotes Availability and Affordability for Underserved Groups
3. Improves Cost-Based Insurance Pricing Models
4. Improve Price Signals to Insureds for Loss Mitigation Investments
5. Help Identify Biases in Data and Modelers / Improve Data Insights
6. Improve Consumer Confidence of Fair Treatment by Insurers

3. Assist, Not Criminalize, Low-Income Consumers' to Obtain Essential Insurance

- Cost-Based Pricing Essential. Don't use insurance pricing to address affordability problems – no subsidies through pricing.
- Prohibit risk classifications that penalize consumers because of economic status.
- Put greater resources into assisting low-income consumers than to tracking, enforcement, penalizing, criminalizing and jailing consumers who cannot afford insurance.
- Create new product and pricing options to assist low-income consumers – low-cost auto product, pay-by-the-mile insurance.
- Federal, state and local government and insurer investments in resilient structures instead of subsidies to achieve affordable premiums.

4. Develop / Improve / Reinvigorate Capabilities for Economic Analysis of Markets, Competition and Anti-Trust.

Inconsistent and sporadic enforcement of advisory organization oversight – many organizations now providing pricing tools as advisory organizations without oversight as advisory organizations.

Will future success in insurance market be determined by quality of products and services or by amount of consumer data the insurer/intermediary/service organization controls?

The largest insurers – with the most data – have a profound competitive advantage over small- and medium-sized insurers because of far greater data assets.

Regulatory Intervention to align market forces with consumer interest, when needed. Regulatory data and economic analysis skills need to meaningfully monitor structure and competitive nature of insurance markets.