Birny Birnbaum, Center for Economic Justice

American Law Institute Early Career Scholars Medal Conference

Honoring Daniel Schwarcz

April 6, 2018

A Note on Competition in Personal Lines Property / Casualty Insurance Markets

This note complements my presentation slides "Modernizing Insurance Rate and Market Regulation," which follow.

Companies can compete in a particular market, but that does mean that market is competitive.

For example, lender-placed insurers compete with one another for the lenders' business, but the market is not competitive for the consumers who pay for the coverage. Similarly, title insurers and agents compete for referrals, but the market is not competitive for the consumers who pay for the coverage.

In a competitive market, purchasers (consumers) have market power to discipline sellers on price and/or product. For example, in automobile markets, consumers' market power has pushed auto makers to improve vehicle safety.

Personal lines insurance markets – auto and homeowners – seem to be missing this characteristic of consumers having market power to discipline insurers on pricing and products.

Imagine if you went to Best Buy to buy a color television – and all you knew about the product is that it comes in a box labeled television. You don't know the price and won't get it until you provide a raft of personal information and allow ongoing monitoring of your personal information and then your price will be different from your neighbors who might want to buy the same television. But you don't know why you got your price or why your neighbor got her price. You don't know how the television performs because there is no performance information and the specifications are buried in a 50 page contract. And you don't even get the television until six months down the road. There is no Consumer Reports analysis of the performance because there's no way to buy a television to test it out. Oh, and you are required to buy a television in order get a loan for your car. Few people would call this a competitive market, yet substitute auto or home insurance for television and that is a description of those insurance markets.

The absence of meaningful competition in auto and home insurance markets is evidenced by several facts:

1. There is no public information on insurers' actual performance of their promise to pay claims if certain events occur.   The information is available, but insurers claim it as a trade secret and regulators have no interest in making it public.

2. There is no public information on what insurers are writing in what markets at what prices – the insurance analog to the Home Mortgage Disclosure Act for many types of lending.   Insurers have done a spectacular job of controlling these data, releasing it only on their terms to their preferred analysts – again in stark contrast to data on lending. And again, insurance regulators not only fail to collect and publish data necessary for a meaningful independent analysis of availability, affordability and fairness, regulators typically defend insurers' decisions to withhold those data not only from the public but even from the regulators themselves.

3. The insurance is a required purchase – you can't opt out if you don't like the product

4. Insurers utilize a variety of risk classifications consumers think are unfair and don't think should be used, yet insurers continue to use these risk classifications – demonstrating consumers' lack of market power.

"More Accurate Risk Assessment" and Competition

Insurers routinely defend the use of any and all available information for risk classification (marketing, underwriting, tier placement, rating, conditioning payment plans) by claiming they are simply engaging in cost-based pricing and that the more accurately insurers can assess risk, the more willing insurers will be to offer and write insurance to traditionally underserved communities.

As a matter of logic and fundamental principles, cost-based pricing and the use of risk classification is necessary and important (and required by law and actuarial principles and standards of practice) for four main reasons –

1. to avoid adverse selection with its associated threat to insurer financial condition;

2. to avoid arbitrary pricing that might threaten insurer financial condition and

3. to provide proper price signals to purchasers for investments and actions in loss mitigation and resiliency; and

4. to avoid intentional or unintentional unfair discrimination against groups who have historically experience harmful discrimination.

How much – how refined and detailed – risk classification is necessary to achieve these goals? If we assume that on a scale from 1 to 10 that 1 is average price for everyone and 10 is a pay as you go system, you don't need to get very far from 1 to achieve these goals.

Insurers' argue that unfettered use of risk classifications permits them to utilize appropriate cost-based pricing and that any restriction will lead to good risks subsidizing bad risks. This is, of course, nonsense.

First, insurers are happy to depart from cost-based pricing when it serves their needs – see price optimization. Or more damning, see the numerous CFA studies showing massive disparities among insurers in the price impacts of the same risk classification – large disparities across insurers within a state as well as large disparities within an insurer across states. Such a result is simply incompatible with cost-based pricing.

Let us detour back to another misuse of competition as an excuse for this arbitrary pricing.   My good friend Dave Snyder, in commenting on one of the Consumer Federation of America's reports showing great disparity in how insurers use mileage as a rating factor said,

> Insurers use a wide variety of factors that have proven to be effective in predicting the likelihood of someone filing an insurance claim, how costly that claim may be, or having a loss.
>
> By using a variety of rating factors, insurers are able to develop a more complete picture of a driver's potential for filing a claim and, in this way, more accurately price the policy."
>
> Actually mileage is often considered but, as one would expect in a competitive market, it is done so differently among insurers.

The proposition that great disparities in the premium impact for the same risk characteristic among insurers within a state and within an insurer across states demonstrates "competition" in insurance markets is inconsistent with cost-based pricing. If a rating factor is related to risk of claims, there is no reason to expect huge disparities in the rate impact of a particular factor among insurers. Just the opposite. The premise behind insurance advisory organizations which combine insurers' data to produce industry loss costs or other pricing guidance is predicated on rating factors having an objective and measurable relationship to risk. If that weren't the case, there would be no basis for combining multiple insurers' experience to obtain a meaningful industry metric. The CFA studies show that insurers are engaged in arbitrary pricing that cannot reflect risk-based pricing. In an industry required by law and actuarial practice to engage in cost-based pricing – these disparities demonstrates arbitrary pricing, not competition.

Back to flaws in the proposition that more risk-segmentation yields-greater availability-and affordability of insurance. Second, various states prohibit certain consumer characteristics (race) or other information (consumer credit information), yet those markets operate without problem and the remaining risk groups are fair from societal, regulatory and actuarial perspectives.

Third, using our 1 to 10 scale – if we rate the risk classification from the early 1990s as, say, a 3 or 4, then we see that certainly 3, 4 or 5 on the scale will meet our goals. But insurers have far passed 5 and are at 7, 8 or 9 now. There is simply no meaningful marginal return in availability to more risk segmentation. In fact, such hyper risk segmentation can reduce availability and affordability in traditionally underserved areas.

Let's look at the evidence cited in support of unfettered risk segmentation -- reduced residual market size.

Residual markets have indeed declined and have done so in part because of insurers increasing the number of rating factors and tiers – moving from non-standard, standard and preferred to dozens, hundreds, thousands or tens of thousands of rating tiers. While insurance credit scoring was the catalyst for insurers moving from two or three rating tiers to many rating tiers and greater segmentation, that change was inevitable with greater computing power, more intensive use of existing data and new types of data.

But the main driver of residual market size is the price and available coverage. In Texas, when auto assigned risk was priced at about 30% above standard auto rates, there were a half million vehicles insured. As assigned risk rates were increased to 60%, 70%, 100% greater than the standard rate, the assigned risk population plummeted.

A far better indicator of insurers being more willing to write at prices consumers can afford is the uninsured motorist rate. And there we have seen little or no improvement in most states and nationally. Rather, changes in the uninsured motorist rate track the state of the economy indicating a strong relationship between consumers' income and uninsured motorist rates. The lack of improvement on a national level is particularly striking given the spate of efforts by states to implement insurance data bases for law enforcement and harsher penalties for failure to maintain insurance, such as no pay no play laws, massive fines and incarceration.

Another measure of availability is the volume of force-placed insurance and, again, the evidence does not support the claim that increased risk segmentation has prompted insurers to write more business.

Our view is that increasing availability is not a primary goal of ever increasing risk segmentation. Rather, we believe the goal is to better identify high value customers and shun low value customers – however the insurer measures value. Again, the evidence does not support the more-risk segmentation- more- writing hypothesis. If the primary goal were to use more risk segmentation to write more business, then we would expect greater transparency of insurers' use of risk classification in order to encourage consumers to take steps to lower their risk profile. Instead, the increased risk segmentation has gone hand in hand with less transparency to consumers with more black box algorithms – pricing tools that provide no price signals to consumers. So we get the worst of all worlds – hyper risk segmentation that further punishes the least favored consumers using opaque algorithms based on socio-economic characteristics that penalize consumers for their economic status and rob the insurance mechanism of its vital role in loss mitigation.

The disparity is on sharp display with auto telematics. The transparent approach would utilize telematics for a pay by the mile program that provides real time feedback to a consumer to encourage loss reduction with financial incentives and consumer tools. The opaque approach collects reams of data from consumers' vehicles, runs it through a proprietary algorithm and spits out a score used for pricing while the insurer utilizes the consumers' data for a variety of other purposes with little or no substantive disclosure to the consumer.

CENTER for ECONOMIC JUSTICE | FAIR ACCESS FAIR TREATMENT

Modernizing Insurance Rate and Market Regulation:

ALI Early Career Scholars Medal Conference
Honoring Daniel Schwarcz

April 6, 2018

Birny Birnbaum
Center for Economic Justice

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.

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.

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.

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/Mobile Phone Tracking/Data Harvesting
- 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

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

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

Allstate CEO to Investment Analysts, May 2017[1]

The insurer's "universal consumer view" keeps track of information on 125 million households, or 300 million-plus people, Wilson said.

"When you call now they'll know you and know you in some ways that they will surprise you, and give them the ability to provide more value added, so we call it the trusted adviser initiative," said Wilson.

Allstate's Data Analytics Subsidiary[2]

"Arity is a data company — an insight company, really — whether or not it's data from fitness sensors or home sensors," Hallgren says. "But everything out of the gate so far is focused on the connected car." That's because the company is benefiting from the wealth of data its parent company has gathered from its DriveWise programs and other telematics initiatives — 22 billion miles in total, according to Hallgren.

---

1 "Allstate CEO: Agents Will Have Access to Data on 125 Million Households," Best's New Service, May 30, 2017

2 "Allstate's Arity Unit Navigates Rapidly Changing World of Data, " Digital Insurance, June 5, 2017

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 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
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.

How to Keep Insurance Markets Competitive and Fair to Consumers and Improve Insurance Role for Economic Security, Loss Mitigation, Resiliency and Sustainability?

1. Articulate What the Future of Insurance Should Look Like.
2. Modernize Insurance Market Regulation.
   a. Monitor Markets More Comprehensively and Efficiently
   b. Develop Tools and Skills to Analyze Regulatory Big Data
   c. Establish Consumer Disclosure, Access, Ownership and Protection Rules for Personal Consumer Information Used by Insurers
   d. New Tools to Empower Consumers
   e. Modernize Oversight of Risk Classification
      i. Ethical Algorithms
      ii. Emphasize Loss Mitigation
      iii. Apply Disparate Impact Standard to Insurance
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.

1. Articulate the Future of Risk Management, Sustainability, Resiliency and 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.

"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

2. Modernize Insurance Market Regulation

a. Monitor Market More Comprehensively and Efficiently

i. What data are insurers using for what purposes? 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. What consumer outcomes are insurers producing? Routine collection and analysis by regulators of granular consumer insurance market outcomes, including transaction-detail data on quotes, sales and claim settlements.

iii. Public data to empower consumers. 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. <u>NAIC resources to assist states</u> with market outcome data collection, management and analysis comparable to NAIC tools for financial regulation and principles-based reserving.

ii. <u>Shift states' market regulation from primarily audit capability to primarily analytic capability</u> 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.

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.

Virginia Eubanks, *Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor*

America’s poor and working-class people have long been subject to invasive surveillance, midnight raids, and punitive public policy that increase the stigma and hardship of poverty. During the nineteenth century, they were quarantined in county poorhouses. During the twentieth century, they were investigated by caseworkers, treated like criminals on trial. Today, we have forged what I call a digital poorhouse from databases, algorithms, and risk models. It promises to eclipse the reach and repercussions of everything that came before.

Why Are Some Risk Classification Prohibited?

- Are Race, Religion and National Origin Prohibited Risk Classifications in Every State?
- If insurers can show a correlation between Race, Religion or National Origin and the costs of the transfer of risk, what is the basis for prohibiting these factors?
- What about prohibitions on the use of genetic test results, gender or consumer credit information – why does the Genetic Information Nondiscrimination Act of 2008 prohibit health insurers from denying coverage or different premiums based on genetic information? Why do some states ban the use of consumer credit information or gender as risk classifications?

Why Are Some Risk Classification Prohibited?

Avraham, Ronen; Logue, Kyle D.; and Schwarcz, Daniel Benjamin, "Understanding Insurance Anti-Discrimination Laws" (2013). *Law & Economics Working Papers.* http://repository.law.umich.edu/law_econ_current/52

Just over half of the states ban the use of race, religion and national origin in auto insurance risk classification. Just seven (7) states ban the use of race, religion and national origin for risk classification for auto, disability, life, health and property/casualty insurance.

Why are race, religion and national origin considered suspect classifications by the Supreme Court?

(1) there is a history of discrimination against the group in question;
(2) the characteristics that distinguish the group bear no relationship to the group members' ability to contribute to society;
(3) the distinguishing characteristics are immutable; and
(4) the subject class lacks political power.

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

Intentional Discrimination versus Disparate Impact:

If intentional discrimination against protected classes is prohibited, why would 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: 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: 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:
Minimizing Disparate Impact in Insurance Models

<u>One Tool: Consider Prohibited Risk Classes in Model Development</u>

Step 1: Include race, religion and national origin – or proxies for these characteristics if actual individual characteristic unknown – as independent variables – control variables – in the model.

By using the characteristics as independent variables in the development of the model, the remaining independent variables' contribution (to explaining the dependent variable) is shorn of that part of their contribution that is a function of correlation with the prohibited characteristics. For the independent variables other than race, religion and national origin, what remains is a more accurate picture of the remaining independent variables' contribution to the target outcome.

Step 2: Omit race, religion and national origin when the model is deployed.

Illustration of One Technique to Minimize Disparate Impact

Let's create a simple model to predict the likelihood of an auto claim:

$$b_0 + b_1X_1 + b_2X_2 + b_3X_3 + e = y$$

Say that $X_{1,}$ X_2 + X_3 are miles driven, driving record and credit score and we are trying to predict y – the frequency of an auto claim.

Let's assume that all three Xs are statistically significant predictors of the likelihood of a claim and the b values are how much each X contributes to the explanation of claim.

b_0 is the "intercept" – a base amount and e is the error term – the portion of the explanation of the claim not provided by the independent variables.

What Happens When We Explicitly Consider A Variable For Race?

$$b_0 + b_1X_1 + b_2X_2 + b_3X_3 + \mathbf{b_4R_1} + e = y$$

R_1 is a control variable – by including race in the model development, the correlation of the Xs to race is statistically removed and the new b values are now the contribution of the Xs, independent of their correlation to race, to explaining the likelihood of a claim

When the model is deployed, the variable for race is removed – the Xs remain, but the b values now minimize disparate impact.

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.