Comments of the Center for Economic Justice

To NCOIL Regarding the Proposed

"Resolution Urging the National Association of Insurance Commissioners to Refrain from Intruding on the Constitutional Role of State Legislators."

June 28, 2020

The Center for Economic Justice (CEJ) suggests that NCOIL withdraw the ill-conceived "Resolution Urging the National Association of Insurance Commissioners to Refrain from Intruding on the Constitutional Role of State Legislators." The Resolution suffers from a number of false statements, fails to recognize the reality of current ratemaking and regulatory review, miscomprehends the oft-repeated term "correlation," represents an endorsement of proxy discrimination against protected classes and misdiagnoses the problem with the white paper's use of rational explanation. Among the problems with the resolution:

1. It is unclear why NCOIL has decided that a technical paper regarding review of complex pricing algorithms is the target for the proclamation of correlation as the intent and sole purview of state legislators. The fact that, among the many critical issues facing insurance consumers, NCOIL has prioritized an industry complaint feeds the perception by some that NCOIL's actions reflect the priorities of its industry corporate sponsors.

2. The premise of the resolution – "established rate filing review is based on correlation" – is demonstrably false and unsupported by statutory language. Neither of the NCOIL rating models cited in the resolution used the term "correlation." The purported reliance on "correlation-only" conflicts with the language of the NCOIL models regarding unfair discrimination.

3. As a former regulator charged with review and approval of rate filings and an expert witness in administrative and judicial proceedings on unfair discrimination and risk classification in insurance for nearly 30 years, simple correlation has never been sufficient justification for a risk classification.

4. The repeated references to "correlation" divorce the resolution from the reality of rate filings today. Insurers' now use algorithms – whether for pricing, claims, anti-fraud or more – based on statistical techniques light years from simple correlation

5. The repeated references to "correlation" are an endorsement of proxy discrimination. By declaring that any correlation is sufficient justification – even if that correlation is a proxy for discrimination against a protected class – and defending such proxy discrimination on the basis of states' rights ignores and repudiates the commitment and efforts by industry and regulators to address systemic racism in insurance.

6. The problem with the use of "rational explanation" in the CASTF White Paper is not a usurpation of legislative prerogative. Rather, "rational explanation" is subjective approach to the problem of identifying spurious correlations.

Why This Resolution Targeting a NAIC Technical White Paper Now?

Insurance regulators at the NAIC have been grappling for over five years with the revolution in insurance operations resulting from insurers' use of big data analytics, complex algorithms, artificial intelligence and machine learning. The regulators' concerns are being examined in the NAIC's Artificial Intelligence Working Group, the Accelerated Underwriting Working Group, the Big Data Working Group, the Innovation and Technology Task Force, the Casualty Actuarial Task Force and more. Insurers' use of big data analytics represents a revolution in insurer operations that has challenged both regulators' ability to keep up with industry practices and for decades-old statutory authorities to provide the necessary consumer protections.

Of all the NAIC activities related to regulatory responses to insurers' use of big data analytics, it is curious that NCOIL has prioritized – in the current period of pandemic and systemic racism issues – with a phrase in a 50-page NAIC white paper – to proclaim a resolution. The fact that NCOIL chooses to prioritize this particular industry complaint about a NAIC technical white paper will fuel the contention of some that NCOIL parrots the interests of its industry corporate sponsors.

As discussed further below, the problem with the term "rational explanation" in the white paper, is not that it challenges state legislative authority, but that it is a technically incorrect approach to addressing problems of spurious correlations.

False Foundation – "Correlation" Does Not Appear in NCOIL and NAIC Rating Models

The foundation of resolution is that claim, " **WHEREAS**, established rate filing review is based on correlation, which demonstrates that rating variables are valid so long as they correlate with a loss."

Yet, the term "correlation" does not appear in either of the NCOIL rating models cited in the resolution. Nor does "correlation" appear in any of the NAIC property casualty rating models.[1] Nor does "correlation" appear in the Casualty Actuarial Society's "Statement of Principles Regarding Property and Casualty Insurance Ratemaking."[2] Nor does it appear in the American Academy of Actuaries "Risk Classification Statement of Principles."[3] The term "correlative classes" appears once in the Risk Classification of Principles in a section on Credibility and not in the manner suggested by the resolution.[4] These risk classification principles identify a variety of considerations in developing risk classifications, including stability in avoiding abrupt changes in prices, maximizing the availability of coverage, minimizing ability to manipulate or misrepresent a risk characteristic and the need for public acceptability.

> Any risk classification system must recognize the values of the society in which it is to operate. This is a particularly difficult principle to apply in practice, because social values
> - are difficult to ascertain;
> - vary among segments of the society; and
> - change over time.
>
> The following are some major public acceptability considerations affecting risk classification systems:
> - They should not differentiate unfairly among risks.
> - They should be based upon clearly relevant data.
> - They should respect personal privacy.
> - They should be structured so that the risks tend to identify naturally with their classification.

In fact, a simple "correlation" is not the basis for fair discrimination. NAIC models define unfair discrimination to exist if "after allowing for practical limitations, price differentials fail to reflect equitably the differences in expected losses and expenses." The NCOIL models don't define unfair discrimination other than discrimination "on the basis of race, color, creed, or national origin."

If, as claimed in the resolution that "rate filing review is based on correlation," then the appropriate test for discriminating "on the basis of race, color, creed, or national origin" would also be a simple correlation between the rating factor and the prohibited classifications.

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[1] See https://www.naic.org/store/free/GDL-1780.pdf and https://www.naic.org/store/free/GDL-1775.pdf and https://www.naic.org/store/free/GDL-1781.pdf
[2] https://www.casact.org/professionalism/standards/princip/sppcrate.pdf
[3] http://www.actuarialstandardsboard.org/wp-content/uploads/2014/07/riskclassificationSOP.pdf
[4] "Accurate predictions for relatively small, narrowly defined classes often can be made by appropriate statistical analysis of the experience for broader groupings of correlative classes.

Miscomprehension of "Correlation" and Regulatory Review of Rate Filings

The resolution incorrectly equates simple correlation with the statutory standards for rates. A correlation is simply the extent to which a pair of variables are related. There are many correlations between variables that bear no relationship to one variable predicting the other variable – and that latter is the essence of a rating factor identifying price differentials among consumers in the cost of the transfer of risk.

Here are some examples of very highly correlated variables, which are also examples of "spurious correlation" [5] – "two or more events or variables that are associated but not causally related due to either coincidence or a third unseen factor."[6] A perfect correlation is 100%. No correlation is 0%

- There was a 94.7% correlation between per capita cheese consumption and the number of people who dies by becoming tangled in their bedsheets from 2000 to 2009.
- There was a 99.3% correlation between the divorce rate in Maine and per capita consumption of margarine from 2000 to 2009. As an aside, the Indiana Department of Insurance disapproved a rate filing in which the insurer sought to use per-capita margin consumption as a risk classification.
- There was a 98.5% correlation between total revenue generated by arcades and computer science doctorates awarded in the US from 2000 to 2009.

In the 30 years that I have been reviewing rate filings and risk classifications and regulatory activity in this arena, a simple correlation has never been a sufficient justification for a rating factor.

We offer two real life examples to demonstrate why this is the case. First, in the early 1990s in Texas, an insurer in Texas sought approval for a homeowners discount based on tenure with insurer – if an insured was with the company for several years, they would get a discount. The insurer provided the following information[7]:

Tenure (Years)	1	2	3	4	5	6	7	8
Loss Ratio	64.0%	63.4%	62.8%	62.2%	61.6%	61.0%	60.4%	60.0%

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[5] https://tylervigen.com/spurious-correlations
[6] https://en.wikipedia.org/wiki/Spurious_relationship
[7] These are not the actual numbers, but an illustration of the actual situation.

Based on this simple "correlation," the loss ratio seemed to track years of tenure with the company. By the standards of the resolution, this presentation of loss ratios would have been the end of discussion and prohibited any further inquiry by the regulator. In fact, the company was asked to produce loss ratios by years of tenure separate for homeowners (e.g., HO-3) policies and renters' policies (e.g. HO-4). It turned out that the company had combined the experience.

When looked at separately, the loss ratios for each of the two types of policies didn't vary with tenure. Homeowners loss ratios were consistent and consistently lower than those for renters' policies. The spurious findings in the table above were a result of the percentage of renters' policies declining as a share of total homeowners policies over time – far fewer people rent for five, six, or seven years than for one or two years so the declining loss ratios in the table were a result of fewer high-loss ratio renters' policies for each additional year of tenure.

A second example comes from a disparate impact challenge under the federal Fair Housing Act. In the mid 1990s, fair housing groups challenged insurers' use of age and value of the home as underwriting factors for homeowners insurance. The insurers used these factors because of a correlation to expected losses. The fair housing groups showed that using age and value of the home served as proxies for race and income. Because of historical discrimination in housing and mortgages, the housing in communities of color was characterized by older age and lower values. When confronted with the data, the insurers recognized they were using a proxy for condition of the home that was, in fact, a proxy for race. The insurers stopped using age and value of the home and started using more accurate variables like age and condition of the roof and type of electrical system. By responding to the disparate impact challenge, insurers stopped penalizing minority homeowners who maintained their homes with race-based underwriting.

Miscomprehension of Insurer Rating Practices and the Challenges for Regulators

The resolution's references to "correlation" seem like a quaint reference to a long-gone – by 50 years – era. The same NAIC Casualty Actuarial Task Force holds monthly "book clubs" in which insurers and experts make presentations on current ratemaking practices. This past week was an example in which Allstate subsidiary Arity made a presentation on the development of their telematics pricing models for auto insurance.[8] The title of the presentation was "Modeling concepts, hyperparameter tuning, and telematics." The presentation reviewed the parts of a scoring (pricing) model, including ordinary least squares regression, generalized linear models, generalized linear models with log link functions, decision tree models, neural nets, gradient descent, hyperparameters and extreme gradient boosting. Needless to say, that when a regulator is presented with rating factors based on such a model, it is meaningless to try to look for a simple correlation.

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[8] https://content.naic.org/sites/default/files/call_materials/Modeling%20concepts%20
hyperparameter%20tuning%20and%20telematics.pdf

It is this new and massive complexity – actuarial science merged with data science merged with astrophysics – that presents the challenge for regulators to enforce current statutes. We suggest that instead of a resolution harkening back to a by-gone era that never really existed, NCOIL's efforts would be better spent working with regulators to modernize regulatory authorities and capabilities to deal with the reality of complex models in insurance.

A challenge for insurers and regulators that has always existed and continues to exist is whether a particular relationship – correlation – is real or spurious. When insurers have tried to utilize the closest thing to a simple correlation, insurers and regulators have found problems. Thirty or more years ago, insurers may have presented justification for a particular rating factor with what is known as a univariate analysis – comparing one predictive variable to, say, loss ratio. With traditional actuarial practices, looking at two or more variables at the same time was difficult because each additional variable required more data for a credible – or reliable – analysis. But the univariate analysis always had problems because insurers and regulators knew that, in addition to any correlation between particular rating factors and loss ratio, there was correlation between the rating factors with the result that univariate analysis led to double counting.

For example, both age and miles driven are related to expected losses. But as drivers get older – and retire form work – they drive less. So, a simple analysis of age and expected losses is reflecting the correlation miles driven and vice versa. So using both based on independent analyses yields double counting.

Since the early 1990's – at least – insurers have moved to new statistical techniques to develop and analyze rating factors. These techniques permit the simultaneous analysis of multiple variables and remove the correlation among the variables to eliminate double counting of impact on outcomes. Stated differently, the multivariate techniques used today advance from and address the limitations of "correlation."

This issue is discussed in greater detail in the attached "CEJ Call to Insurers and Insurance Regulators to Address Systemic Racism in Insurance."

Tacit Endorsement of Proxy Discrimination against Minority Consumers and Other Protected Classes in the name of States' Rights.

The repeated references to "correlation" in the resolution are an endorsement of proxy discrimination.   By declaring that any correlation is sufficient justification – even if that correlation is a proxy for discrimination against a protected class and defending such proxy discrimination on the basis of states' rights – ignores the commitment and efforts by industry and regulators to address systemic racism in insurance.

By the standard espoused in the resolution, a rating factor that was a proxy for being a Black American is legitimate as long as there is a correlation to losses. Never mind that the factor is a proxy for a prohibited class or that that the factor discriminates on the basis of a prohibited factor.

Some data vendors offer a criminal history score that purports to score homeowners insurance on the basis of complaints filed with courts. Based on the resolution, as long as there was a "correlation," that would not only be okay, but regulators are prohibited from further inquiry. What would the use of a criminal history score look like in the case of George Floyd, if he lived? What would the use of a criminal history score look like in Ferguson, Missouri, where the US Department of Justice found the following.

> 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.
>
> 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.

It would be interesting to count the number of NCOIL members who have received citations for Manner of Walking in Roadway, let alone been penalized with higher insurance rates as a result.

In the aftermath of the murder of George Floyd, many insurer CEOs made statements declaring their personal and corporate opposition to inherent bias and systemic racism. The NCOIL resolution goes in the other direction – it defends systemic racism in insurance by prohibiting inquiry into proxy discrimination. This unfortunate position by NCOIL is also tone-deaf. It relies upon the same states' rights argument used by those opposing the abolition of slavery and integration.

The Problem with the White Paper's Use of "Rational Explanation" is Not a Challenge to Statutory Standards, but a Technical Issue with Identifying Spurious Correlations

The CASTF's white paper use of "rational explanation" is problematic because it is a subjective approach to addressing spurious correlations. It is not a challenge to the mythical statutory standards in the resolution because regulators and actuarial standards of practice have always sought to distinguish between real and false relationships among predictive variables in insurance. "Rational explanation" is problematic because "rational" is subjective – a rational explanation to one person may not be rational to another. The way to address the problem with "rational explanation" is to urge regulators to utilize more of the advanced analytic and statistical tools to distinguish between fair and proxy discrimination. Again, the attached CEJ paper discusses this in more detail.

> The NAIC Casualty Actuarial and Statistical Task Force deals generally with actuarial issues in property casualty lines of insurance. The Task Force is currently developing a white paper to provide best practices for regulatory review of complex pricing models used by insurers to justify rates. The current draft does not incorporate identification and minimization of systemic bias or disparate impact, but simply lists it as another consideration. Insurance rate standards include rates not being excessive, not being inadequate and not being unfairly discriminatory.

> The use of complex predictive models for pricing by insurers is focused on risk segmentation and the development of risk classifications and rating factors. Traditional actuarial techniques – not complex predictive models – are generally used for overall rate level indications – the metric for assessing whether rates are excessive or inadequate. The overwhelming reason for close scrutiny of complex predictive models by regulators is to assess whether the risk classifications are fair or unfairly discriminatory. It is an understatement to say that the current draft white paper has a massive whole because of the failure to address proxy discrimination and disparate impact. Guidance to insurance regulators for regulatory review of complex insurance predictive models should prioritize the identifications and minimization of systemic bias and disparate impact.

Conclusion

For a myriad of reasons, CEJ suggests that NCOIL withdraw this deeply-flawed resolution.