



AMERICAN ACADEMY of ACTUARIES

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February 4, 2022

Commissioner Michael Conway
Colorado Division of Insurance
1560 Broadway, Suite 850
Denver, CO 80202

Dear Commissioner Conway:

On behalf of the American Academy of Actuaries (Academy),¹ I am writing to offer input as you draft rules pertaining to the implementation of [Colorado Revised Statute \(C.R.S.\) § 10-3-1104.9](#) signed into law on July 6, 2021. The law prohibits unfair discrimination based on certain personal characteristics—race, color, national or ethnic origin, religion, sex, sexual orientation, disability, gender identity, or gender expression—in any insurer practice. It also prohibits the use of external data, algorithms, or predictive models that unfairly discriminate against individuals with these characteristics.

It is our understanding that, per C.R.S. § 10-3-1104.9, you and the Division of Insurance (DOI) will be gathering input from stakeholders and other interested parties regarding its implementation, beginning this month.

As you know, the actuarial profession is heavily involved in the ratemaking and rate setting processes of insurers across all lines of insurance. In fact, the Academy has previously corresponded to the primary sponsor, Sen. Janet Buckner, of the legislation which was ultimately enacted with the following input:

- 1) [Property/Casualty](#)
- 2) Health ([April 30, 2021](#); [March 29, 2021](#))
- 3) [Life](#)

It is our belief that we can continue to provide useful professional input as you work on the implementation of C.R.S. § 10-3-1104.9. The comments that follow relate to property/casualty, health, and life practice areas generally. At the end of the letter, we note some specific considerations and a series of recommendations for property/casualty, life, and health insurance based on unique characteristics such as whether the coverages are mandated or voluntary,

¹ The American Academy of Actuaries is a 19,500-member professional association whose mission is to serve the public and the U.S. actuarial profession. For more than 50 years, the Academy has assisted public policymakers on all levels by providing leadership, objective expertise, and actuarial advice on risk and financial security issues. The Academy also sets qualification, practice, and professionalism standards for actuaries in the United States.

statistical modeling methods, impact on health equity, and others. We note that these differences between practice areas will likely require different approaches in implementation, because the approaches that apply to one practice area may not apply to other practice areas.

We support efforts to eliminate unfair discrimination and understand the importance of regulating the use of personal characteristics, external data, algorithms, and predictive models by insurers. Credentialed actuaries practicing in the U.S. are subject to professional guidance through our [Code of Professional Conduct](#) and [actuarial standards of practice](#) (ASOPs) developed by the Actuarial Standards Board. Several ASOPs that apply across all practice areas provide insight into actuarial risk classification. For example:

- ASOP No. 12, *Risk Classification*, provides guidance to actuaries when performing professional services with respect to designing, reviewing, or changing risk classification systems.
- ASOP No. 23, *Data Quality*, provides guidance to the actuary when performing actuarial services involving data.
- ASOP No. 56, *Modeling*, provides guidance to actuaries when performing actuarial services with respect to designing, developing, selecting, modifying, using, reviewing, or evaluating models.

To the extent practicable, we would encourage that C.R.S. § 10-3-1104.9 regulations avoid conflict with actuarial standards of practice. We note that if laws and regulations conflict with actuarial standards of practice, actuaries are required to comply with the laws and disclose any conflict.

Definition of Unfair Discrimination and Disproportionately Negative Outcomes

C.R.S. § 10-3-1104.9 seeks to prohibit unfair discrimination based on an individual’s “race, color, national or ethnic origin, religion, sex, sexual orientation, disability, gender identity, or gender expression” in “any insurance practice.” The characteristics noted in C.R.S. § 10-3-1104.9 identify protected classes. Regulations in many states prohibit insurers from using protected class information directly in ratemaking models. Insurers are also prohibited in many states from intentionally using proxy rating variables for protected classes.

C.R.S. § 10-3-1104.9 defines “unfairly discriminate” and “unfair discrimination” to include “the use of one or more external consumer data and information sources, as well as algorithms or predictive models using external consumer data and information sources, that have a correlation to race, color, national or ethnic origin, religion, sex, sexual orientation, disability, gender identity, or gender expression, and that use results in a disproportionately negative outcome for such classification or classifications, which negative outcome exceeds the reasonable correlation to the underlying insurance practice, including losses and costs for underwriting.”

We note that this definition leaves open several questions that will need to be clarified in order to implement the law, including:

- How would the correlation of external data/algorithms/predictive models to protected classes be measured?

- What constitutes a “disproportionately negative outcome”? How would a “disproportionately negative outcome” be measured?
- What is meant by “the reasonable correlation to the underlying insurance practice, including losses and costs for underwriting”?

We note that a “disproportionately negative outcome” as defined in C.R.S. § 10-3-1104.9 is similar in concept to a “disproportionate impact” as defined in a 2002 Academy Risk Classification Subcommittee report to the National Association of Insurance Commissioners (NAIC).² Disproportionate impact occurs when a rating tool results in higher or lower rates, on average, for a protected class, controlling for other distributional differences. We believe that the concepts of disproportionate impact and disproportionately negative outcomes form a useful basis for the implementation of C.R.S. § 10-3-1104.9. We are also careful to note that “disproportionately negative outcome” and “disproportionate impact” are different from “disparate impact,” which is a concept that is used in other legal contexts and comprised of a two-step process.

Principles for Approaches to Identify and Address Unfair Discrimination

Insurance practices are becoming increasingly complex, which will pose challenges in implementing C.R.S. § 10-3-1104.9. When considering various approaches to implementation of the law, we recommend that the commissioner consider the following principles in your rulemaking process that follow principles that are consistent with actuarial standards of practice, support a consistent approach among insurers while allowing for appropriate flexibility, and represent what we believe can lead to best practices to identify and address unfair discrimination:

1. Develop Rules to Mitigate Disproportionately Negative Outcomes

We understand the intent of the new law is to address disproportionately negative outcomes on protected classes, as discussed above. We note that disproportionately negative outcomes can unintentionally occur in various contexts, including in the potential for proxy discrimination and modeling decisions. Therefore, we encourage rules be developed with the goal of mitigating all forms of disproportionately negative outcomes.

2. Create Rules that are Consistently Understandable to All Stakeholders

In order to promote consistent application across all lines of insurance, we encourage the DOI to create rules that are understood consistently by insurers, regulators, and the public.

3. Establish Rules Allowing Insurers to Continue to Differentiate Rates Based on Expected Cost

We encourage the DOI to create rules that allow insurers to continue to differentiate rates based on expected cost. We recognize that even when insurers do not use protected class data in their risk classification practices, whether directly or by proxy, the resulting prices could be different for members of different protected classes. Those resulting prices are not necessarily unfairly discriminatory if there are expected cost differences between the insureds in those protected classes, and additional analysis would need to be performed to determine if the resulting prices are indeed discriminatory beyond the reasonable correlation to underlying insurance practices, as required by C.R.S. § 10-3-1104.9.

² [*Use of Credit History for Personal Lines of Insurance*](#), American Academy of Actuaries, 2002.

4. Adopt Rules Based on Practicality and Efficiency for Insurers to Adapt to New Data, Innovation and Technology

Data collection, innovation, and technology are continuously evolving. We encourage the commissioner to adopt rules that consider the practicality and efficiency of the process used by insurers and regulators to adapt to new data, innovation, and technology.

5. Develop Rules that Reflect Intersectionality and Interconnectedness of Protected Classes

Individuals in protected classes could fall into more than one category of protected class. Thus, we encourage the DOI to develop rules to reflect the interconnected nature among different protected classes and the impact of such intersectionality. In addition, we recommend the rules be based on consideration that many policies may cover multiple individuals under a single policy where association with a particular class is difficult (e.g., a homeowner's policy for a multi-racial household).

6. Consistently Apply Rules for All Insurers/Policyholders

Given that C.R.S. § 10-3-1104.9 will place certain requirements on insurers, we encourage the DOI to consider rules that can be applied consistently across insurers.

7. Adopt Rules that Consider Multivariate Effects

We encourage the commissioner to adopt rules that consider situations where a particular external data element might appear to be unfairly discriminatory in isolation, but not be unfairly discriminatory when considered with all rating variables within the risk classification system (and vice versa). Multivariate effects recognize the dependencies between variables, which are important to identify and quantify.

8. Consider Impact to Insurance Marketplace and Accessibility and Cost to Consumers

While we encourage consistent application of rules across insurers, we encourage the commissioner to be mindful of the cost and practical challenges for some insurers, to avoid unintentional impacts on accessibility or costs for consumers, and to preserve a healthy insurance marketplace.

9. Consider How/How Often to Monitor Rules After Initial Approval

After a particular practice is approved as not unfairly discriminatory, it is important for the rules to consider whether and how often monitoring and/or re-application should be required, given changes in demographics and other inputs over time.

10. Consider Frequency of Refreshing Data on Protected Classes

Given that an individual's protected class identification can change over time (e.g., religion, gender identity, or disability status), consideration on how often an individual's class information should be collected is advisable. Any data used in a model should be appropriate for the intended purpose and sufficiently current.

Data Collection Considerations

To study the treatment of protected classes in a manner consistent with C.R.S. § 10-3-1104.9, data will be required to perform an analysis and arrive at an assessment. However, the insurance industry currently does not have accurate and readily available sources of most forms of protected class data. Given that insurance companies generally do not collect protected class data today, new approaches for sourcing this data may need to be developed. These data sources could be developed by (1) obtaining data directly from the insureds, (2) capturing existing data from third-party databases, or (3) imputing the data using statistical methods.

Each of these approaches for sourcing protected class data has benefits and drawbacks. A combination of approaches may need to be used in the short and medium terms until accurate policyholder data can be securely sourced.

Class Definition Considerations

C.R.S. § 10-3-1104.9 prohibits unfair discrimination based on race, color, national or ethnic origin, religion, sex, sexual orientation, disability, gender identity, or gender expression. When considering the definitions of these classes and the collection of data needed to demonstrate that practices are not unfairly discriminatory, we recommend that the commissioner consider the following principles.

1. Capable of Being Objectively Determined

In order to promote consistent approaches and applications, classes should be defined in a way that allow for the collection of data that is objectively determined. This poses a number of challenges, including:

- a. How will religion or disability status be categorized?
- b. How will classes containing more fluid characteristics, like gender expression, be defined?
- c. How will it be handled if an individual identifies themselves in more than one category, e.g., race for those identifying with multiple races?

2. Practical Limitations in Collecting Data

Consideration of practical limitations in data collection, including cost and efficiency, is advisable.

3. Ability to Achieve Credible Results

Given that individuals within a given protected class are likely to exhibit a number of varying and different risk characteristics, and that insurers will have differing insured populations and mix of business, it is important that the class definitions balance homogeneity with the ability to achieve credible results when demonstrating that a particular insurance practice is not unfairly discriminatory.

4. Frequency of Reviewing Definitions, After Established

Given that categorization of classes can change over time, it is important that consideration be given as to how often the DOI would review and update the class definitions.

Many of the above principles are consistent with generally accepted actuarial practice and the principles contained within ASOP No. 12, such as objectivity, practicality, and credibility.

Definition of External Consumer Data and Information Sources

C.R.S. § 10-3-1104.9 includes several terms within the definition of “External Consumer Data and Information Sources” that would benefit from further clarification through the rulemaking process and will be important for actuaries and others in the implementation of the new law. For example, while the term “lifestyle indicators” is generally understood, it may be helpful to include a definition in the rules to lessen any ambiguity and to ensure actuaries and others understand the risk characteristics that need to be tested under the unfair discrimination definition.

We also believe that several of the examples of external consumer data and information sources could benefit from further clarification. Credit scores could be understood as either the credit score issued by FICO^{®3} or a similar organization or a score generated from any model utilizing information from a consumer’s credit report. Location data could include not only telematic data but also the garaging location, a traditional rating factor. Homeownership is generally understood but could affect a company’s use of multi-policy discounts that recognize the associated expense savings. Civil judgments and court record data could include fraudulent insurance activity that may be considered appropriate for underwriting.

We note that section (8)(b)(II) allows the commissioner to further define external data and information sources in regulation for particular lines of insurance and insurance practices. We encourage the clarification of these definitions and suggest the following considerations:

- External data including personal characteristics could be collected and used to identify, monitor, and correct bias in internal data. It is unclear whether the enacted legislation addresses the use of data for this purpose because it is outside the realm of current insurance practice. We believe that it would be important for the regulations to discern appropriate use of this type of external data from inappropriate use, because it is critical to the effective implementation of guardrails against unfair discrimination in insurance.
- Is external consumer data limited to data purchased from an external source? For example, personal characteristic data collected during the enrollment, application, or renewal process might be considered as internal and used in a manner that could be considered as unfairly discriminatory. Would data collected in this manner be subject to the same rules as the same data collected from different sources?
- Because the definition of insurance practice in C.R.S. § 10-3-1104.9 includes marketing, we consider providing clarification as to whether marketing is limited to the overall

³ Originally developed by Fair Isaac Corp. <https://www.fico.com/en/products/fico-score>.

product strategy or also includes outreach to insureds. Marketing may refer to multichannel, differentiated outreach approaches to engage policyholders with different needs. This may involve the collection of personal characteristic data to refine the outreach approach depending on the needs of the specific subpopulation.

Underwriting/Pricing Based on Sex

- Included in the list of classifications that must not unfairly discriminate beyond a reasonable correlation is a person's sex. Sex is a common rating characteristic used in Colorado that is permissible under certain conditions (CRS 10-3-1104(f)(iii)), which is routinely collected as part of the underwriting process for certain insurance products. Given its usage in rating plans, we recommend the commissioner consider clarifying through rulemaking a company's ability to continue to use sex as a rating variable, unless prohibited by state and/or federal law, and provide guidance as to the circumstances where the use of sex could be considered unfairly discriminatory. Additionally, for certain health coverages—such as major medical insurance where rating by sex is prohibited—actuaries may incorporate the overall distribution by sex when projecting utilization and costs for the market as a whole. Prohibiting the incorporation of sex in cost projections could lead to overall premiums that are either excessive or inadequate. Further examples related to the appropriate use of personal characteristics in health insurance are detailed below.

Other Considerations

We recommend the commissioner also consider the following as you draft the rules and requirements for the implementation of C.R.S. § 10-3-1104.9:

1. **Unintended Impacts to Consumers**—It is prudent to consider potential unintended marketplace impacts that could result from regulations implemented, including potential negative impacts regarding accessibility and affordability of coverage.
2. **Multiple Methods**—There are many methods that could be considered as appropriate means to demonstrate that insurance practices are not unfairly discriminatory as defined by C.R.S. § 10-3-1104.9. It is important to consider that the use of multiple methods can provide additional insight to regulators, rather than relying on one method.
3. **Small Companies**—Given that smaller insurers could have additional challenges in complying with the regulations, due to credibility and practical limitations (among others), we encourage the commissioner to adopt rules that consider these challenges.
4. **Affordability**—Many concerns regarding disproportionately negative outcomes arise out of issues related to affordability of insurance. It should be noted that the elements in C.R.S. § 10-3-1104.9 do not directly reduce costs of insurance and thus affordability concerns could remain after rules are adopted and enforced.
5. **Data Protection and Cost of Implementation**—There will be costs to the insurers related to implementation of the law, which could impact premiums, including:
 - a. Gathering and protecting sensitive data
 - b. Storing data
 - c. Performing analysis to support non-discriminatory rates

6. **Data Granularity**—Consider the importance of specifying whether the data that is used to evaluate unfair discrimination must be specifically linked to each individual or whether the data can be generally imputed from other sources.
7. **Field Test**—We would recommend that you consider implementing a field test prior to final adoption of any proposed rules associated with the revised statute in order to more thoroughly understand the impact that the proposed rules might have.
8. **Use of the Data, Algorithms, or Predictive Models**—It is important to understand how any data (internal or external to the insurer), algorithms, or predictive models are used. For example, in health care management, algorithms can be used to identify individuals who would benefit from disease management or care management programs. If designed well, these types of algorithms could help reduce health disparities by improving care and health outcomes for people with chronic conditions and high-risk individuals, especially those from underserved or under-resourced communities. In fact, in the health care arena, many predictive models focus on identifying gaps in care, and analyzing emergency room usage, likelihood of hospitalization, medication adherence, and other factors that often favor outreach to those who are underutilizing services and those who are potentially socially vulnerable.

However, such models could exacerbate disparities if not designed well. For instance, algorithms that use claims cost to identify members to prioritize for more intensive case management could cause algorithms to de-prioritize individuals with lower historical health care costs (which may disproportionately impact historically marginalized groups), even if they have the same underlying conditions as patients whose historical claims patterns indicate greater utilization, which may imply greater historical access to care. It is unclear whether the statute offers sufficient flexibility to allow the rulemaking process to address unfair discrimination if only internal data is used.

Work examining how to test for bias in algorithms and predictive models is relatively new and evolving. And because algorithms and predictive models are used in a variety of health care and health insurance areas—e.g., in provider contracting to identify high-quality and cost-effective providers; in risk-adjusted value-based purchasing payments to providers to reflect whether outcomes goals were achieved; in risk-adjusted plan payments to reflect the underlying health of the enrollee population; in care and disease management programs to identify enrollees who would most benefit from the programs—there is not a one-size-fits-all test. Ultimately, it is important to consider how the choice of data (both internal and external) and the structure of algorithms and predictive models might affect health disparities. A recently published guide⁴ for identifying and auditing algorithmic bias in health care models suggests a framework that could be used to identify bias in these models. In addition, an Academy Data Science and Analytics Committee issue paper provides other considerations across practice lines.⁵ These considerations could be helpful to identify algorithms that may be unfairly discriminatory in the context of Colorado insurance law. Similarly, there are public tools available for testing an algorithm for bias. While the American Academy of Actuaries

⁴ [Algorithmic Bias Playbook](#), Center for Applied AI at Chicago Booth.

⁵ [Big Data and Algorithms in Actuarial Modeling and Consumer Impacts](#), American Academy of Actuaries, November 2021.

does not endorse any of these publicly available resources, it should be acknowledged that these public tools can be helpful to inform the DOI's rulemaking process.

Practice-Specific Comments

Property/Casualty Practice Comments

While the concepts and standards discussed earlier in this letter to identify and address unfair discrimination apply across multiple insurance coverages, two methods of identifying and addressing unfair discrimination have emerged for property/casualty coverages that might be useful to consider when determining acceptable methods of compliance:

- **Statistical model**—One approach is to build a non-discriminatory model, described in the article “Discrimination-Free Insurance Pricing” by Mathias Lindholm,⁶ that could be used proactively by insurers to eliminate any proxy effects of rating variables prior to filing their algorithms. Essentially, the insurer would first build a model including all rating variables and the protected class variables. Then the effect of the discriminatory information would be removed in such a way that the protected variables are removed as well as any proxy effects from the remaining variables.

Considering the principles for addressing unfair discrimination identified earlier, this method can measure different types of disproportionately negative outcomes; is adaptable to new data, innovation, and technology; and can handle multivariate effects. However, the method may not be as understandable to all stakeholders, particularly the public, and it may be more challenging for some insurers without sufficient data or sophisticated pricing models to execute.

- **Loss ratio**—An approach would be for insurers to demonstrate that the loss ratios produced by the losses and premiums for different categories of a protected class, (e.g., race), are not materially different.

With respect to the principles for addressing unfair discrimination identified earlier, this method would be more understandable to stakeholders, including the public; easier for all companies to implement; and could address most forms of disproportionately negative outcomes. However, this method may not be able to handle multivariate effects or address some forms of disproportionately negative outcomes, particularly those of an intersectional nature.

⁶ Lindholm, Mathias and Richman, Ronald and Tsanakas, Andreas and Wuthrich, Mario V., “Discrimination-Free Insurance Pricing” (January 16, 2020). ASTIN Bulletin open access FirstView 2021 <https://www.cambridge.org/core/journals/astin-bulletin-journal-of-the-iaa/article/discriminationfree-insurance-pricing/ED25C4053690E56050F437B8DF2AD117>, Available at SSRN: <https://ssrn.com/abstract=3520676> or <http://dx.doi.org/10.2139/ssrn.3520676>.

These are methods among many others likely to emerge over time, and the Casualty Practice Council of the Academy is ready to assist the DOI in its review of the technical components as well as identifying strengths and weaknesses, particularly in relation to the principles noted above.

Life Practice Comments

While many of the issues that are discussed in this letter apply to all lines of insurance, an important issue that distinguishes life insurance from other types of insurance is that the purchase of life insurance is a voluntary transaction between a consumer and an insurance company. Further, the decision to purchase life insurance is an independent, stand-alone decision that is not mandated as a result of another activity (e.g., obtaining a mortgage or driving a car). This emphasizes the importance of risk selection (i.e., underwriting) to ensure (1) the insurability of the applicant and (2) the suitability of the insurance (i.e., the applicant's financial need and ability to pay).

Unlike other types of insurance, the life insurance risk selection or underwriting process is typically performed one time prior to policy issuance with rates that are, at some level, guaranteed for the life of the policy (often 30+ years). These policies are non-cancellable by the insurer, other than for non-payment of premium or lack of policy performance. As a result, life insurance liabilities are regularly locked in for decades based on a one-time underwriting of the potential risk.

Recently, there has been an increased effort by life insurers to lessen the more invasive and time-consuming elements of the risk selection processes. These methods are often described as "accelerated underwriting," and are not limited to the analysis of fluids and other measurements. With accelerated underwriting, alternative data, predictive models, and algorithms are used to forecast probabilistic outcomes around relative mortality or risk. While time is required to realize the true impact of these emerging methods of risk classification, there is a strong correlation between these factors and mortality/morbidity experience.

We urge you to consider these unique aspects of life insurance risk selection when developing regulatory requirements for life insurance.

Health Practice Comments

While many of the issues described in this letter apply to all lines of insurance, there are some additional issues, discussed below, that apply specifically to health insurance practices.

Consistency of Application Across all Types of Risk-Bearing Entities: Unlike other types of insurance, the assumption of health insurance risk is not limited to traditional insurance companies. Our understanding is that risk bearing entities such as health maintenance organizations or provider organizations that assume health insurance risk are not included in the definition of "insurer" pursuant to CRS § 10-1-102(13). If that is the case, the applicability of C.R.S. § 10-3-1104.9 to those entities is unclear. To ensure a level playing field, it is important that similarly situated risk-bearing entities be subject to the same rules. Additionally, it would be

important to clearly identify the entity or entities to which these rules are intended to apply when there is a sharing or delegation of risk and/or responsibility among risk-bearing entities. Therefore, it may be appropriate for the rules to clarify applicability of the statute and allow for its applicability to more than one risk-bearing entity involved in providing services to an insured or member of a health plan.

The Use of Personal Characteristics to Further Health Equity: The discrete use of personal characteristics by a health carrier does not necessarily mean that its use is unfairly discriminatory. An absolute prohibition on using personal characteristics in insurer practices such as utilization management, population health, customer service, and reimbursement methodologies could run counter to appropriate actuarial practices and could interfere with efforts to reduce health disparities. For example, with respect to major medical coverage:

- Prohibiting the consideration of race, ethnicity, or sex could make it more difficult for insurers to target efforts to improve care and health outcomes for historically underserved or marginalized populations and to measure progress toward equity goals. Additionally, it might prohibit care management programs related to services and conditions among certain segments of the population (e.g., pregnancy, prostate cancer screening).
- Prohibiting the consideration of personal characteristics in provider reimbursement methods, such as value-based purchasing, could reduce the ability for insurers to tie provider compensation to patient outcomes. For instance, it may be appropriate to adjust patient outcomes for patient characteristics to ensure equitable reimbursement that support providers that serve patients in marginalized communities.

These examples illustrate the importance of carefully considering how personal characteristics are used. It may be helpful for the regulations to include reporting requirements to facilitate the monitoring and identification of inappropriate use of personal characteristics, without placing an undue burden on the reporting entity.

The American Academy of Actuaries appreciates this opportunity to provide comments to the Colorado Division of Insurance. We hope these observations are helpful, and as you and the DOI begin to undertake the stakeholder engagement process to implement C.R.S. § 10-3-1104.9, we would welcome the opportunity to discuss these comments with you directly. In the meantime, if you have any questions, please contact Craig Hanna, the Academy's director of public policy, at hanna@actuary.org.

Sincerely,

Maryellen Coggins
President
American Academy of Actuaries