# The Insurance Industry's Commitment to Fairness in Insurance Pricing

## *A Survey of Historical and Current Research Concerning Risk-Based Pricing and Unfair Discrimination*

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# EXECUTIVE SUMMARY

This paper examines the origins and evolution of policymaker and insurer commitments to ensuring fairness in insurance pricing and surveys the research (historical and current) measuring the success of those commitments. The first modern rating laws in the United States—adopted well over a century ago—defined unfair discrimination as charging different rates to different persons with "risks of a like kind and hazard." Today, that same concept of fairness remains a cornerstone of contemporary ratemaking and rate regulation—that actuarially sound (i.e., risk-based) rates must be reasonable and not excessive, inadequate, or unfairly discriminatory.

Risk-based pricing is firmly established both in law and actuarial principles, and its essential role in preserving not only fairness in rates but also insurer solvency and competition is well-understood. Additionally, decades of research by regulators, the federal government, and academics demonstrate that fair rates are unambiguously associated with a range of positive economic, social, and even behavioral outcomes. Yet despite more than a century of experience and decades of supporting research, policymakers, and consumer advocates in some states—particularly over the past 30 years—have persistently pushed for severe restrictions on the ability of insurers to use certain proven, actuarially-sound rating factors in their pricing models, citing concerns that these factors potentially lead to unfairly discriminatory rates for certain racial/ethnic minorities.

This paper highlights the remarkable consistency in research findings—from the 1990s to the present—rejecting the hypothesis that insurance pricing is unfairly discriminatory as it relates to racial/ethnic minorities. The major policy implication of this uniform finding is that regulatory prohibitions, restrictions, and limitations on actuarially sound rating factors—frequently imposed by regulators in the name of fairness—distort pricing, reduce competition, and diminish policyholder incentives to reduce risk, thereby imposing costs on society and potentially harming the very policyholders regulators are attempting to help.

# TABLE OF CONTENTS


INTRODUCTION 3

FAIRNESS IN RATEMAKING: A CENTURY OF PRECEDENT 4

- NAIC INITIATIVES TO ENSURE FAIRNESS IN RATES 4
- RESEARCH INTO FAIRNESS IN RATES YIELDS MANY INSIGHTS 4
- CONNECTING THE PAST WITH THE PRESENT 5

THE LINK BETWEEN FAIRNESS IN RATES AND INSURER SOLVENCY 5

FAIRNESS IN RATEMAKING: DECADES OF RESEARCH, ONE CONSISTENT RESULT 6

REGULATORY UNDERPRICING AND RATING VARIABLE RESTRICTIONS: SIMILAR NEGATIVE MARKET CONSEQUENCES 7

RATING VARIABLE PROHIBITIONS: THE ILLUSTRATIVE CASE OF CREDIT-BASED INSURANCE SCORES 8

- CBIS, RACE AND ETHNICITY: FEDERAL TRADE COMMISSION REPORT (2007) 9
- CBIS AND INCOME: GEORGETOWN LAW/JOURNAL OF EMPIRICAL LEGAL STUDIES (MORRIS, ET AL., 2017) 10

OBSERVED CONSUMER BEHAVIORS VALIDATE RATING VARIABLES 11

- PROHIBITED RATING VARIABLES AND BEHAVIORAL FACTORS DRIVING LOSSES (APCIA AND HARTWIG, 2021) 11
- RACE, THE PRICE OF INSURANCE AND INSURER PROFITABILITY (HARRINGTON AND NIEHAUS, 1998) 12

NEW LEGISLATION, NEW RESEARCH, CONSISTENT CONCLUSIONS 12

- COLORADO SENATE BILL 21-169 13
- DISTRICT OF COLUMBIA DEPARTMENT OF INSURANCE, SECURITIES, AND BANKING INITIATIVE TO EVALUATE UNINTENTIONAL BIAS IN PRIVATE PASSENGER AUTO INSURANCE 14

RECENT DATA PROVIDER RESEARCH 14

- LEXISNEXIS® RISK SOLUTIONS 14
- TRANSUNION 15
- VERISK 16

SUMMARY & CONCLUSIONS 17

# INTRODUCTION

Insurance ratemaking and rate regulation in the United States rest on the bedrock principle that actuarially sound rates must be "reasonable and not excessive, inadequate, or unfairly discriminatory."[1] This principle has stood the test of time. Enshrined by the Casualty Actuarial Society (CAS) in its Statement of Ratemaking Principles decades ago, its origins stretch back more than a century with adoption of the first modern rate regulation statute in Kansas in 1909.[2] The enduring nature of this principle is rooted in a simple, logical, and intuitive premise: that rates are driven by expected cost.

All four rate standards articulated by this principle (i.e., that rates are reasonable, not excessive, inadequate, or unfairly discriminatory) are themselves cost-based concepts. The association between cost and the concept that rates should be reasonable, not excessive, or inadequate is intuitive. The rate standard of "unfairly discriminatory" as applied by actuaries is also cost-based but is frequently misunderstood, leading to confusion, controversy, and debate among regulators and consumers. "Unfairly discriminatory" is uniformly defined in state insurance codes and related cases as a rate that treats persons with similar risk profiles differently.[3] The everyday use of the word "discrimination" is unconnected to the cost-based definition and has led stakeholders in some states to conflate the differing definitions and assert that the use of certain underwriting factors (e.g., gender, credit information) is unfair without considering the important purpose served by the specialized definition in the insurance context. Insurers, of course, collect no information related to race or ethnicity. Indeed, decades of research have provided clear and consistent evidence that the underwriting factors and actuarial methodologies employed by insurers do not discriminate against protected groups but do promote a rate structure that is fair (i.e., rates are based on expected loss), fosters competition, and incentivizes behaviors that reduce risk.

In this paper, we examine the latest research on the topic of unfair discrimination with a specific focus on a number of states where the issue has been recently raised by regulators. We will also draw a clear distinction between "unfair discrimination," which is a cost-based actuarial concept, with "disparate impact," which is not. Consistent with the findings of 30-plus years of prior research by regulators, academics, and the federal government, we conclude that the underwriting factors and pricing methodologies employed by insurers today result in rates that are actuarially sound—reflecting the expected cost of a claim—and are therefore not unfairly discriminatory.

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1 "Casualty Actuarial Society, Statement of Principles Regarding Property and Casualty Insurance Ratemaking; May 1988. Available at: **https://www.casact.org/sites/default/files/2021-05/Statement-Of-Principles-Ratemaking.pdf**.

2 State of Kansas, Session Laws, 1909, Chapter 152, Section 7.

3 See, e.g., N.J. Stat. Ann § 17-29A-7 (review to prevent "rates that are unreasonably high or excessive, or are not adequate for the safeness and soundness of the insurer, or are unfairly discriminatory between risks in this State involving essentially the same hazards and expense elements"); Ohio Rev. Code Ann. §§ 3935.03, 3935.04 (review to ensure that "[r]ates shall not be excessive, inadequate, or unfairly discriminatory); see also, e.g., Ind. Code Ann. § 27-1-22-5; Wis. Stat. Ann. § 625.13; In re Universal Underwriters Life Ins. Co., 685 N.W.2d 44, 47 (Minn. Ct. App. 2004); Blue Cross & Blue Shield of Del., Inc. v. Elliott, 479 A.2d 843, 847 (Del. Super. Ct. 1984).

# FAIRNESS IN RATEMAKING: A CENTURY OF PRECEDENT

Assuring the price policyholders pay for insurance is fair has been a principal concern of insurance regulators for more than a century. When Kansas adopted the nation's first modern rate regulation standard well over a century ago in 1909, it defined unfair discrimination as charging different rates to different persons with "risks of a like kind and hazard."[4] New York adopted a similar standard in 1911. The National Convention of Insurance Commissioners, the predecessor organization to today's National Association of Insurance Commissioners (NAIC), used the New York law to develop a model law which was soon adopted by many states. Today, every state requires that insurers base rates on risk—ensuring that rates are cost-based.

*Assuring the price policyholders pay for insurance is fair has been a principal concern of insurance regulators for more than a century.*

## NAIC INITIATIVES TO ENSURE FAIRNESS IN RATES

In recent decades, regulators—often through the NAIC—have proposed and utilized increasingly sophisticated analytical methods to explore possible unfair discrimination in pricing and underwriting.[5] In 1994, the NAIC's Statistical Task Force developed statistical reporting guidelines that for the first time included ZIP code level reporting for auto and home insurance for statistical agents. A primary motivator of this effort was the public availability of economic and demographic data by ZIP code that could be used to facilitate research into possible unfair discrimination in these markets.[6] In the aftermath of the 1992 Los Angeles riots, increased regulator focus on urban insurance markets served as a catalyst for the NAIC to launch a multi-year research effort, resulting in the publication of six studies focusing on possible unfair discrimination in insurance markets and culminating in a final report in 1998.[7] Using ZIP code level data, researchers were "unable to draw definitive conclusions that unfair discrimination exists."[8,9]

## RESEARCH INTO FAIRNESS IN RATES YIELDS MANY INSIGHTS

The NAIC's seminal research and its conclusions during the 1990s spurred volumes of additional research by regulators, academics, and the federal government over the next quarter century, including very recent research discussed later in this paper. Findings from the resulting body of research, key contributions to which are summarized in subsequent sections, are remarkably consistent. The key central finding across studies and over time—that insurance pricing does not result in unfair discrimination—represents an enduring validation of the NAIC's early work.

4 See footnote 2 and Miller, M. "Disparate Impact and Unfairly Discriminatory Insurance Rates." Casualty Actuarial Society *E-Forum* (Winter 2009). Available at: **https://www.casact.org/sites/default/files/database/forum_09wforum_miller.pdf.**

5 NAIC Center for Insurance and Policy and Research, "Milestones in Racial Discrimination within the Insurance Sector." (August 2020). Available at: **https://content.naic.org/sites/default/files/cipr-report-milestones-racial-discrimination.pdf**.

6 *Ibid* and NAIC Statistical Task Force, p.173 (1994).

7 NAIC Insurance Affordability and Availability Task Force (EX3), *Improving Urban Insurance Markets: A Handbook on Available Options,* (January 1998). Available at: **https://naic.soutronglobal.net/Portal/Public/en-US/RecordView/Index/11621**.

8 *Ibid*. See also citation in footnote 4.

9 In July 2020, the NAIC announced the formation of a special committee on race and insurance. The committee's primary focus relates to diversity, equity, and inclusion issues, though it is also charged with determining whether "current practices exist in the insurance sector that potentially disadvantage minorities." As of July 2023, no report had been issued by this committee. NAIC Press Release (July 23, 2020). Available at: **https://content.naic.org/article/news-release-naic-announces-special-committee-race-and-insurance**.

The same body of research has also yielded many additional, valuable insights. Fair rates, for example, are shown to be associated with a range of positive economic, social, and even behavioral outcomes. Collectively, these benefits support market competition and increase consumer choice while also incentivizing behaviors that reduce claim costs by reducing the frequency of accidents, injuries, and deaths. The major policy implication of this finding is that regulatory prohibitions, restrictions, and limitations on actuarially sound rating factors—frequently imposed by regulators in the name of fairness—distort pricing, reduce competition, and undermine policyholder incentives to reduce risk, thereby imposing costs on society and potentially harming the very policyholders regulators are attempting to help.

*Fair rates, for example, are shown to be associated with a range of positive economic, social, and even behavioral outcomes.*

Another important and consistent finding is that higher prices for insurance in densely populated urban areas reflect higher claim costs, not bias.[10] Because loss ratios for individuals living in these areas are higher than those who do not, there is no evidence to suggest the presence of unfair discrimination.

### CONNECTING THE PAST WITH THE PRESENT

There may seem to be little connection between intense regulator interest in recent decades in the issue of unfair discrimination in insurance pricing and regulators' century-plus focus on maintaining insurer solvency—yet the two are inextricably linked. Unfair rates are, by definition, not primarily determined by cost. But in competitive markets, only cost-based pricing is consistent with long-term insurer solvency. This linkage is explored in more detail in the following section.

## THE LINK BETWEEN FAIRNESS IN RATES AND INSURER SOLVENCY

The notion that actuarially sound rates must be reasonable and not excessive, inadequate, or unfairly discriminatory is not merely a noble principle. It is an imperative that derives directly from the original and two important purposes of insurance regulation—consumer protection and minimizing the risk of insurer insolvency. The United States Supreme Court affirmed state authority to regulate insurance rates in this manner in 1914, asserting that insurance is a "business affected with a public interest."[11] The remaining focus of this paper is twofold – namely, minimizing the risk of insurer solvency by prohibiting inadequate rates based on cost and the concern for fairness.

10 In addition to high population density, factors contributing to higher average auto claim costs in urban areas include traffic congestion, high relative frequency of accidents, the prevalence of on-street parking, greater incidence rates of motor vehicle theft, high motor vehicle repair costs, high medical costs, and litigiousness.

11 *German Alliance Ins. Co. v. Lewis*, 233 U.S. 389 (1914).

The inseparability of ratemaking, cost, and risk—all essential elements in preserving insurer solvency—is made clear by three additional ratemaking principles set forth by the Casualty Actuarial Society, all of which are explicit recognitions that the price of insurance is fundamentally driven by costs:[12]

Principle 1: A rate is an estimate of the expected value of future costs;

Principle 2: A rate provides for all costs associated with the transfer of risk, and

Principle 3: A rate provides for the costs associated with an individual risk transfer.

Adherence to Principles 1, 2, and 3 leads directly to CAS Ratemaking Principle 4—our "bedrock" principle discussed at the start of this paper:

*Principle 4: A rate is reasonable and not excessive, inadequate, or unfairly discriminatory if it is an actuarially sound estimate of the expected value of all future costs associated with an individual transfer of risk.*

In summary, the concept of risk-based pricing is firmly established both in law and actuarial principles. Consequently, an unfairly discriminatory rate can reasonably be defined as one that is not statistically correlated with expected losses and expenses.[13] Stated differently, only accurate rates are fair—and only fair rates are accurate. The irony, therefore, is that those who in the name of "fairness" seek to prohibit the use of certain risk-based underwriting criteria (e.g., credit-based insurance scores, gender, occupation), if successful, will succeed only in creating rates that are intrinsically unfair to other categories of consumers (e.g., lower risk consumers)—the antithesis of their stated objective.

## FAIRNESS IN RATEMAKING: DECADES OF RESEARCH, ONE CONSISTENT RESULT

Regulation, legal precedent, and actuarial principles recognize that fairness in rates is essential to the goal of preserving insurer solvency in competitive insurance markets. Despite this fact, insurers find themselves continually engaged in defense of these goals. The intensity of the debate has stimulated significant research by regulators, academics, and the federal government into the implications and consequences of restrictions on underwriting criteria and actuarial models that are proven to be statistically predictive of insured losses and related costs.

The conclusions drawn from three decades of research are strikingly consistent and can be succinctly summarized as follows:

i. Regulatory actions compelling the exclusion (or limitation) of actuarially-sound rating factors directly and immediately produce inaccurate rates.

ii. Implementation of inaccurate rates results in the mispricing of insurance characterized by the subsidization of high-risk policyholders by low-risk policyholders.

iii. Subsidization of high-risk policyholders increases overall system costs.

iv. Overall system costs rise because high-risk policyholders are undercharged relative to their true risk and therefore increase their insurance purchases, while low-risk policyholders are overcharged and purchase less insurance.

v. Regulatory actions compelling the exclusion (or limitation) of actuarially-sound rating factors can be expected to reduce competition.

12 See footnote 1. Casualty Actuarial Society, Statement of Principles Regarding Property and Casualty Insurance Ratemaking, Principles 1, 2 and 3, p.2.

13 Powell, L. "Risk-Based Pricing of Property-Liability Insura)nce." *Journal of Insurance Regulation*, v.39, n. 4 (2020). Available at: **https://content.naic.org/sites/default/files/inline-files/JIR-ZA-39-04-EL.pdf**.

The market distortions introduced by regulatory prohibitions and limitations on rating factors described by conclusions (i) through (iv) are an example of a very well-known and well-studied problem in insurance and economics known as adverse selection. Adverse selection is the tendency of persons with an above-average chance of loss to seek insurance at standard (average) rates.[14] Insurers control adverse selection through careful underwriting, which is the process of selecting and classifying applicants for insurance based on the risk profile each presents.[15] Prohibitions and limitations on the use of certain rating factors represent restrictions on underwriting that impair the ability of insurers to properly classify and price risks. The true cost of risk posed by a particular policyholder is therefore obscured, with pricing distortions manifesting themselves in the form of the cross-subsidies required by adverse selection.

Apart from adverse selection, research also reveals that inaccurate insurance pricing can increase insurance losses in several other ways including fraud,[16] moral hazard, and decreased incentives for loss control.[17]

Numerous studies attest to the impact of how inaccurate or distorted pricing affects insurance markets. In a comprehensive analysis of price regulation in personal auto insurance markets across all fifty states, Weiss et al. (2010) find that cross-subsidies increase claim severity (costs) by 14.3 percent and increase claim frequency by 7.3 percent.[18] In a comprehensive 2010 survey of empirical research on adverse selection in insurance markets, the authors refer to the volume of that research as "vast," citing more than 100 studies about or related to adverse selection.[19] More recent research confirms earlier findings. Su and Tennyson (2021), analyzing automobile insurance data from Massachusetts during the rate-regulated period from 1990 through 2005, find that "regulatory underpricing" (i.e., subsidies) result in the purchase of more insurance than would otherwise be expected *and* that such underpricing results in higher loss experience than would otherwise be expected.[20]

> ***... distorted pricing affects insurance markets.***

## REGULATORY UNDERPRICING AND RATING VARIABLE RESTRICTIONS: SIMILAR NEGATIVE MARKET CONSEQUENCES

Decades of research demonstrate that regulator efforts to fix the price of insurance at levels other than those driven by expected loss will invariably result in rates with embedded cross-subsidies and potentially adverse consequences for individual policyholders and for society as a whole. As discussed previously, prohibitions and limitations on the use of certain rating factors have much the same effect because of the distortionary effects such policies have on pricing.

Insurance companies use rating variables to develop insurance premiums that accurately reflect the risks that policyholders pose. If one rating variable is prohibited, pricing becomes more dependent on the rating variables that remain. For example, if the use of gender in rate-setting for auto insurance is prohibited, rates will be set using other rating variables that are less predictive of the risk of loss than gender, resulting in

14 Rejda, G. and McNamara, M., Principles of Risk Management and Insurance, Pearson, 13th ed. (2017).

15 *Ibid.*

16 Derrig, R., Weisberg, H., and Chen, X., "Behavioral Factors and Lotteries under No-Fault with a Monetary Threshold: A Study of Massachusetts Auto Claims," *Journal of Risk and Insurance*, (1994).

17 Blackmon, B. and Zeckhauser, R., "Mispriced Equity: Regulated Rates for Auto Insurance in Massachusetts," *American Economic Review*, v. 81, n. 2 (1991).

18 Weiss, M., Tennyson, S., and Regan, L., "The Effects of Regulated Premium Subsidies on Insurance Costs: An Empirical Analysis of Auto Insurance," *Journal of Risk and Insurance*, v. 77, n. 3 (2010).

19 Cohen, A. and Siegelman, P., "Testing for Adverse Selection in Insurance Markets," *Journal of Risk and Insurance*, v.779, n. 1 (2010).

20 Su, B. and Tennyson, S., "Price Subsidies and the Demand for Automobile Insurance," Working Paper, (March 18, 2021) **https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3806219**.

inadequate (and less accurate) rates. This can be expected to lead to a now-familiar result—lower-risk policyholders effectively subsidizing higher-risk policyholders. Young male drivers cost more to insure than female drivers, but if gender as a rating variable is prohibited, then female drivers (a protected class) will overpay for insurance and younger male drivers will underpay, relative to their expected costs. Prohibiting rating variables therefore negatively impacts the insurance consumer.[21]

*Prohibiting rating variables therefore negatively impacts the insurance consumer.*

Despite the well-documented negative consequences, policymakers currently show renewed interest in prohibiting the use of certain accurate ratemaking variables in personal lines (automobile and homeowners) insurance. Policymakers are considering, and in some states enacting, laws that would exclude gender, education, occupation, and credit-based insurance scoring (CBIS) as insurance rating variables. Excluding accurate rating variables (and thereby limiting the number of variables) from the insurance pricing process has negative consequences. The expected result of using fewer rating variables is that accuracy of insurance prices decreases, creating cross-subsidies, where lower-risk insureds pay higher premiums and higher-risk insureds pay lower premiums. In addition to being objectively unfair, cross-subsidies increase the overall cost of insurance and distort policyholder incentives to take appropriate precautions. The result is higher prices, more property damage, more injuries, and potentially more fatalities.

## RATING VARIABLE PROHIBITIONS: THE ILLUSTRATIVE CASE OF CREDIT-BASED INSURANCE SCORES

Credit-based insurance scores were introduced by credit-rating organizations in the early 1990s and were quickly demonstrated to be highly accurate predictors of insured loss, resulting in the rapid and widespread adoption of CBIS by auto and home insurers. Today, an estimated 95 percent of auto insurers and 85 percent of home insurers employ CBIS in states where it is permitted.

Credit-based insurance scores have arguably been subjected to more regulatory scrutiny than any other rating variable used in property casualty insurance underwriting. The NAIC cites studies examining insurer use of CBIS by nearly a dozen states and numerous additional studies by academics, the actuarial profession, and the federal government.[23] The actuarial validity of CBIS is not in question. Rather, regulatory scrutiny of CBIS—and opposition to its use by some consumer groups—stem from concerns that certain minority groups and low-income individuals could be unfairly and adversely impacted by CBIS and that CBIS serves as a proxy for prohibited rating variables such as race, ethnicity, or income. Research consistently rejects these claims while simultaneously validating the actuarial validity of CBIS. A brief review of seminal research on this topic follows.

21 Casualty Actuarial Society and Insurance Information Institute, "Insurance Rating Variables: What They Are and Why They Matter" (July 2019). Available at: **https://www.casact.org/sites/default/files/2021-06/Insurance_rating_variables_white_paper.pdf**.

22 NAIC Center for Insurance and Policy Research, "Credit-Based Insurance Scores." Available at: https://content.naic.org/cipr-topics/credit-based-insurance-scores.

23 NAIC Center for Insurance and Policy Research, "Studies, Reports and Surveys Examining the Use of Credit Scoring, Occupation or Education in Insurance." (March 2013) Available at: https://content.naic.org/sites/default/files/legacy/documents/committees_c_d_auto_insurance_study_wg_related_studies_examining_use_credit_scoring.pdf.

## CBIS, RACE AND ETHNICITY: FEDERAL TRADE COMMISSION REPORT (2007)

Among the many studies, reports, and analyses of insurer use of credit-based insurance scores, a 2007 report by the Federal Trade Commission (FTC) is widely viewed to be the most comprehensive and authoritative.[24] The FTC conclusively determined that CBIS are "effective predictors of claims that consumers will file." But the Commission's findings go far beyond the well-established correlation between CBIS and insured loss, pointing out that the use of CBIS benefits all consumers, including racial and ethnic minorities. In this sense, CBIS achieves two critical objectives of any ratemaking plan: efficiency and equity. Elements of each are central to the FTC's key findings, summarized below:

- Scores effectively predict the number of claims consumers file and the total cost of those claims. Their use is likely to make the price of insurance better match the risk of loss that consumers pose. Thus, on average, as a result of the use of scores, higher-risk consumers pay higher premiums and lower-risk consumers pay lower premiums.
- Use of scores may result in benefits for consumers. For example, scores permit insurers to evaluate risk with greater accuracy, which may make them more willing to offer insurance to higher-risk consumers for whom they otherwise would not be able to determine an appropriate premium. Scores also may allow insurers to grant and price coverage more efficiently, producing cost savings that could result in lower premiums.
- Although scores vary among racial and ethnic groups, scores effectively predict risk of claims within those racial and ethnic groups.
- The Commission could not develop an alternative scoring model that would continue to predict risk effectively yet decrease the differences in scores among racial and ethnic groups. The results of these efforts indicate that there is no readily available alternative scoring model that would achieve those results.[25]

Policymakers and consumer advocates generally predicate their calls to prohibit or restrict insurer use of CBIS and other rating variables on equity concerns centered on race, ethnicity, and income. The FTC's findings concerning CBIS suggest that these concerns are largely misplaced. Further, the Commission cautions that prohibitions on the use of insurance scores can lead to pricing distortions and market disruptions that can harm the very populations such actions are intended to benefit.

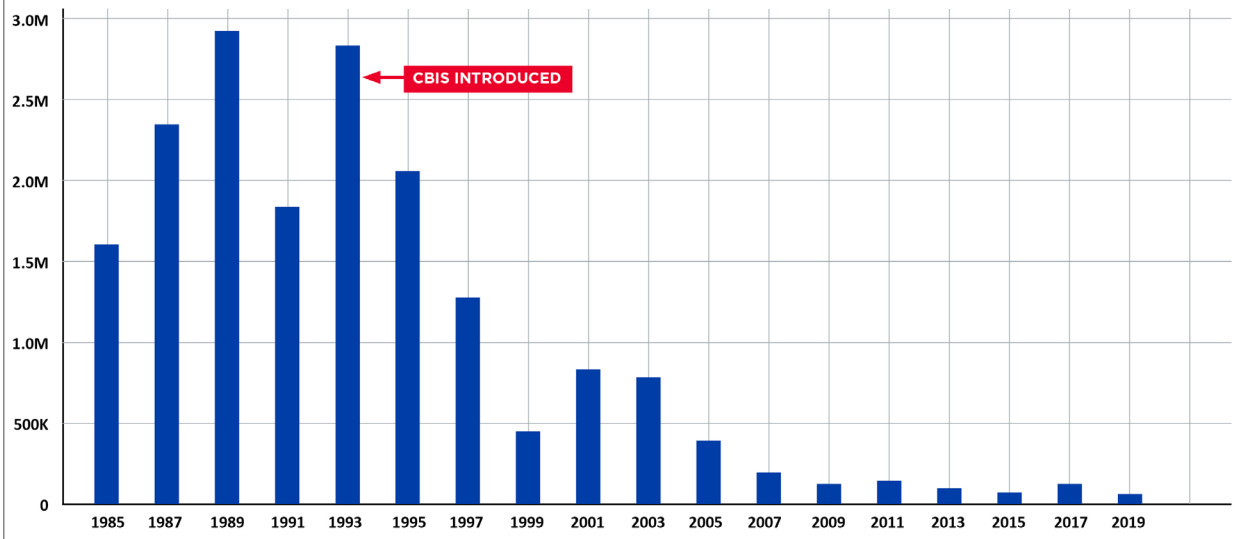
> ***... scores permit insurers to evaluate risk with greater accuracy ...***

For example, among the most important—and perhaps most underappreciated—findings of the FTC's credit-based insurance scoring study is that scores permit insurers to evaluate risk with greater accuracy which, in turn, may make them more willing to offer insurance to higher-risk consumers for whom they otherwise would not be able to determine an appropriate premium. In other words, the use of credit-based insurance scores can increase competition among insurers for high-risk drivers, resulting in more options and lower premiums. This is true within and across groups stratified by race, ethnicity, and income. One vivid illustration of this effect is the dramatic decline in applications to state auto insurance plans (AIP),

24 Federal Trade Commission, "Credit-Based Insurance Scores: Impacts on Consumers of Automobile Insurance," (July 2007). Available at: **https://www.ftc.gov/sites/default/files/documents/reports/credit-based-insurance-scores-impacts-consumers-automobile-insurance-report-congress-federal-trade/p044804facta_report_credit-based_insurance_scores.pdf**.

25 It is not within the scope of this paper to expound on disparate impact analysis as most recently articulated by the United States Supreme Court in Inclusive Communities. However, the Commission's finding that "there is no available alternative scoring model that would achieve similar results" is consistent with the Court's framework for identifying when unintentional discrimination is unlawful. See *Texas Department of Housing & Community Affairs v. Inclusive Communities Project, Inc.*, 576 U.S. 519, 542 (2015).

**FIGURE 1** AIP PRIVATE PASSENGER APPLICATION VOLUMES (1985-2019)




Source: AIPSO

which are state-run high-risk pools for motorists who cannot find coverage in the market. As displayed in Figure 1, in 1985 approximately 1.6 million drivers across 25 states applied for coverage through AIPs and by 1989 that number had soared to nearly 3 million. When credit-based insurance scores were introduced in 1993, applications began to decline. By 2019, there were just 160,000 applications in those states, a decline of 95 percent from its 1989 peak.

The bottom line is that the use of credit-based insurance scores by insurers does not result in unfair discrimination against racial and ethnic minorities. Indeed, insurer use of CBIS results in a fair and accurate assessment of risk while simultaneously encouraging competition.

## CBIS AND INCOME: GEORGETOWN LAW/JOURNAL OF EMPIRICAL LEGAL STUDIES (MORRIS, ET AL., 2017)[26]

Whereas the FTC's 2007 report validates the predictive power of CBIS across racial and ethnic groups, a 2017 study by Morris et al. focuses on CBIS as a potential proxy for income. The study complements and strengthens the FTC's conclusions related to race and ethnicity by finding that "insurance scores do not proxy for income in a standard actuarial model of auto claim risk." Importantly, Morris et al. also assert that insurance scoring "does not always or necessarily have a disparate impact on low-income policyholders." Instead, their analysis finds that "policyholders' incomes are very weakly correlated with their insurance scores." This finding is critical because policymakers and advocates frequently assume that higher-income individuals are less likely to experience credit problems than lower-income individuals—and base their calls to prohibit the use of CBIS on this assumption.

Taken together, the FTC and Morris et al. studies reject the notion that insurance scoring results in unfair discrimination based on race, ethnicity, or income. At the same time, both studies confirm that CBIS are strongly predictive of insured loss. More broadly, both studies are consistent with decades of prior research demonstrating that regulatory prohibitions, restrictions, and limitations on actuarially sound rating factors distort pricing, reduce competition, and diminish policyholder incentives to reduce risk.

26 Morris, D., Schwarcz, D., and Teitelbaum, J., "Do Credit-Based Insurance Scores Proxy for Income in Predicting Auto Claim Risk?" *Journal of Empirical Legal Studies*, v. 14, n. 2 (June 2017).

In the section that follows, we examine new research that illustrates how CBIS and several other rating factors commonly prohibited or restricted by regulators are highly predictive not only of loss, but the underlying behaviors driving those losses.

# OBSERVED CONSUMER BEHAVIORS VALIDATE RATING VARIABLES

## PROHIBITED RATING VARIABLES AND BEHAVIORAL FACTORS DRIVING LOSSES (APCIA AND HARTWIG, 2021)[27]

Historically, insurers have estimated future losses—and determined rates—by examining the statistical correlation between a large combination of actuarially sound and independently predictive rating variables. Advances in technology now enable insurers and policyholders to observe—in real time and directly—how certain rating factors correlate with specific driving behaviors and insured losses. Using telematics data gathered from insured drivers, the American Property Casualty Insurance Association (APCIA) and Hartwig study demonstrates the association between two common risky driving behaviors—hard braking and hard acceleration—and loss across several commonly used rating variables. Several of these variables—education, occupation, and credit-based insurance scores—are among those regulators and consumer advocates most frequently seek to limit or exclude from rating models.

Because frequent hard braking and hard acceleration have both been proven to result in more costly claim outcomes, each of the driver characteristics (e.g., education, occupation, credit-based insurance scores) associated with these behaviors discussed in the paper are strongly predictive of loss. For example, in the case of credit-based insurance scores, telematics data show that hard braking behaviors are strongly associated with the higher-risk drivers (i.e., those with a lower CBIS). The cost to insure the highest risk drivers is approximately 28 percent higher than for the overall driver population. Conversely, the cost to insure drivers with the strongest CBIS is about 30 percent lower than the overall driver population. Telematics data therefore not only corroborate prior research demonstrating that credit-based insurance scores are strongly predictive of loss but provide direct evidence that certain risky behaviors are more (less) prevalent among drivers with lower (higher) CBIS. Telematics data also expose the adverse public safety consequences of prohibiting the use of CBIS in rating models. Specifically, prohibiting CBIS directly penalizes drivers who exhibit safe driving behaviors while rewarding (via implicit subsidies) drivers who engage in frequent unsafe behaviors. Similarly consistent findings were found for education, occupation, and marital status.

The findings of the APCIA and Hartwig study also confirm the importance of allowing insurers to maintain use of all actuarially sound rating variables. Restricting or prohibiting their use can adversely impact rate accuracy, fairness, public safety, and consumer choice.

27 American Property Casualty Insurance Association and Hartwig, R., "Behavioral Validation of Auto Insurance Rating Variables." APCIA White Paper (November 2021). Available at: **https://www.apci.org/media/news-releases/release/68827/**.

### RACE, THE PRICE OF INSURANCE AND INSURER PROFITABILITY (HARRINGTON AND NIEHAUS, 1998)[28]

Much research related to alleged unfair discrimination by insurers stems from the use of certain underwriting variables, including credit-based insurance scores. Presumably, if certain racial or ethnic groups were subject to systematic discrimination by insurers, they would be subject to higher prices (and, therefore, lower relative loss ratios) and/or less availability—resulting in higher profits for insurers on policies sold to minorities relative to those sold to non-minorities. The hypothesis that corporations (in any industry) engaging in systematic discrimination against minorities would, if successful, be expected to generate higher profits is attributable to Nobel Prize-winning economist Gary Becker.[29]

To test this hypothesis in the context of insurance, Harrington and Niehaus analyzed auto insurance loss ratios. The testable hypothesis is that discrimination results in lower loss ratios for minorities accompanied by higher premiums. Using loss ratio and demographic data by ZIP code for Missouri, the study finds that "loss ratios are not significantly lower in zip codes with larger minority populations." In other words, there is no evidence that discrimination is increasing the cost of auto insurance in the state. One of the most important implications of this finding is that the comparatively higher cost of auto insurance in urban areas with large minority populations is "attributable to high claims costs in these areas—not discrimination."

It is worth noting that a 2001 study of the Texas homeowners insurance market produced similar findings, concluding that loss ratios are "roughly equivalent" between low- and high-minority ZIP codes, suggesting that the pricing for these areas is "actuarially fair."[30]

> ***... loss ratios are "roughly equivalent" between low- and high-minority ZIP codes, suggesting that the pricing for these areas is "actuarially fair."***

## NEW LEGISLATION, NEW RESEARCH, CONSISTENT CONCLUSIONS

The NAIC's formation of a Special Committee on Race and Insurance in 2020 was indicative of renewed regulator interest in the issue of potential unfair discrimination. Although research findings over the past 30 years clearly and consistently reject the hypothesis of unfair discrimination in insurance pricing, a number of states have recently passed legislation requiring insurers to demonstrate that the data and models they use to develop rates do not exhibit disproportionate negative outcomes for members of protected classes. Because insurers do not collect information on the race or ethnicity of their policyholders, complying with such legislation is inherently challenging. Nevertheless, insurers—working with external partners—have successfully developed methodologies that once again demonstrate that there is no evidence of unfair discrimination. These research approaches draw heavily on the methodologies researchers have developed over the past 30 years.

In the sections that follow, we examine recent legislation and regulatory initiatives and summarize corresponding research.

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28 Harrington, S. and Niehaus, G. "Race, Redlining and Automobile Insurance," *Journal of Business*, v. 71, n. 3 (1998). The study used data for the years 1988 – 1992.

29 Becker, G., Nobel Lecture, "The Economic Way of Looking at Behavior," *Journal of Political Economy*, v. 101 (June 1993). Becker was the recipient of the 1992 Nobel Prize in Economics.

30 Klein, R. and Grace, M. "Urban Homeowners Insurance Markets in Texas: A Search for Redlining," *Journal of Risk and Insurance*, v. 68, n. 4 (December 2001).

## COLORADO SENATE BILL 21-169

In July 2021, Colorado passed into law Senate Bill 21-169 (SB 21-169), which requires insurers to test their "external consumer data, and information sources, algorithms, and predictive models" to ensure they are not unfairly discriminating against consumers on the basis of a protected class.[31] Specifically, SB 21-169 requires insurers to demonstrate to the Colorado Division of Insurance how they are testing their data and tools to ensure they do not result in unfair discrimination. Because SB 21-169 does not prescribe a methodology for ascertaining the presence (or lack thereof) of unfair discrimination, compliance with the statute necessitates that insurers devise their own methodologies which, as discussed previously, is inherently problematic given that insurers do not collect data on the race or ethnicity of their policyholders.[32]

To overcome this hurdle, the American Academy of Actuaries has proposed six methods for identifying potential bias in insurance ratemaking, with the "loss ratio test" method ideally suited for the purposes of satisfying the requirements of SB 21-169.[33] Specifically, if discrimination against protected classes exists, the loss ratios for minority populations would be lower than for the overall population of policyholders. Lower loss ratios would result from higher prices charged by the insurer and/or less paid in claims, generating higher relative profits for the insurer.[34]

An August 2023 study by researchers for Faegre Drinker Biddle & Reath and Pinnacle Actuarial Resources applied the loss ratio test to determine whether unfair discrimination exists in the state of Colorado.[35] Using data for 2014-2015 and 2018–2019 covering approximately 40 percent of the Colorado personal auto insurance market, researchers used aggregated premium and loss data across many different insurers to compute liability loss ratios for each ZIP code in the state.[36] Corresponding publicly available racial and ethnic demographic data from the U.S. Census Bureau were also collected.[37] Comparing loss ratios for ZIP codes in which minorities account for the majority of the population with those in which non-Hispanic whites were the majority, researchers concluded that premiums are not excessive relative to losses in geographical areas with a higher percentage of racial minorities. In other words, there is no evidence at the aggregate level that minorities were overcharged for auto insurance in the state of Colorado.[38]

> ***... premiums are not excessive relative to losses in geographical areas with a higher percentage of racial minorities.***

31 Colorado Division of Insurance (July 2021). Available at: **https://doi.colorado.gov/for-consumers/sb21-169-protecting-consumers-from-unfair-discrimination-in-insurance-practices**.

32 SB 169 was codified as C.R.S.A. § 10-3-1104.9 (Effective September 7, 2021).

33 American Academy of Actuaries, "Approaches to Identify and/or Mitigate Bias in Property and Casualty Insurance," Issue Brief (February 2023). Available at: **https://www.actuary.org/sites/default/files/2023-02/CPCdataBiasIB.2.23_0.pdf**.

34 Methodologically, this approach is very similar to the approach taken in the 1998 study by Harrington and Niehaus discussed earlier in this paper (see footnote 25).

35 Faegre Drinker Biddle & Reath and Pinnacle Actuarial Resources, Inc., "The Relationship between Personal Auto Insurance Loss Ratios and Racial Demographics in Colorado." (August 2023). Study was conducted at the request of the American Property Casualty Insurance Association.

36 Premium and loss data are from the Independent Statistical Service (ISS).

37 Demographic data from the U.S. Census Bureau is provided using ZIP Code Tabulation Areas (ZCTAs), which as the researchers point out, are very similar, though not identical, to ZIP codes. Researchers limited their analysis to ZIP codes in their premium and loss data with corresponding ZTCAs and having a population greater than zero.

38 The Faegre et al study was peer reviewed in August 2023 by Dr. David Bauer, Hickman-Larson Chair in Actuarial Science and chair of the Department of Risk and Insurance of the University of Wisconsin. Dr. Bauer agrees with the authors' conclusion that insurers' "use of external consumer data does not result in unfair discrimination."

### DISTRICT OF COLUMBIA DEPARTMENT OF INSURANCE, SECURITIES, AND BANKING INITIATIVE TO EVALUATE UNINTENTIONAL BIAS IN PRIVATE PASSENGER AUTO INSURANCE

In June 2022, the District of Columbia Department of Insurance, Securities, and Banking (DISB) initiated a project designed to "look at the potential for unintentional bias in auto insurance." The project was undertaken following the DISB's creation in 2020 of a Diversity, Equity and Inclusion Committee tasked with engaging in a "wide-ranging review of financial equity and inclusion and to make recommendations to remove barriers to accessing financial services."[39] With respect to insurance specifically, the DISB's stated reason for the initiative is "to explore whether the use of certain information by auto insurers in the application and underwriting process may cause harm to Black, indigenous, people of color, and other protected classes of Washington, DC consumers."

In response to the DISB's initiative, Faegre, et al, performed an analysis designed to address the DISB's concerns. Because the issues raised by the DISB were similar to those raised in Colorado's SB 21-169 (discussed in the previous section), the loss ratio test was again employed. Faegre et al's findings are similar to those in Colorado. Specifically, their analysis suggests that "premiums are not excessive relative to losses in geographic areas with a higher percentage of racial minorities." As in Colorado, the researchers conclude that "this result supports the conclusion that, at the aggregate market level, there is not unfair discrimination on the basis of race as to premiums charged and claims paid in Washington, D.C."

## RECENT DATA PROVIDER RESEARCH

In recent years, several major insurance industry data providers have conducted research consistent with long-standing efforts to demonstrate and expand their commitment to financial inclusion and equity. In this section we summarize three of these efforts.

### LEXISNEXIS® RISK SOLUTIONS

LexisNexis® Risk Solutions[40] provides its customers with solutions and decision tools that combine public and industry-specific content with advanced technology and analytics to assist them in evaluating and predicting risk and enhancing operational efficiency. LexisNexis Risk Solutions uses the power of data and advanced analytics to help our customers make better, timelier decisions.

LexisNexis Risk Solutions conducted quantitative testing for unfair bias on the most recent version of their credit-based insurance scores, LexisNexis® Attract™ model for auto insurance and the LexisNexis® Risk Classifier model for life insurance, using the well-established and precedented methodologies set forth in studies done in 2007 by the Federal Trade Commission (FTC) and in 2016 by Georgetown University Law Center (Georgetown Law). Additionally, LexisNexis Risk Solutions used Bayesian Improved Surname Geocoding (BISG) to estimate the race/ethnicity for the individuals.

39 District of Columbia Department of Insurance, Securities and Banking (2022). Available at: **https://disb.dc.gov/page/evaluating-unintentional-bias-private-passenger-automobile-insurance**.

40 LexisNexis is a registered trademark of RELX Inc. Attract is a trademark of LexisNexis Risk Solutions Inc. Used with permission.

To examine whether an insurance score contains evidence of unfair bias as it relates to a certain race/ethnic group, there are two core steps in the quantitative testing process:

1: Does the insurance score differentiate risk within a certain race/ethnic group?

2: Does controlling for race or ethnicity change the impact of the insurance score on predicted risk?

When LexisNexis Risk Solutions applied these steps, it found that the model scores maintained a high level of differentiation within the certain race/ethnic group which indicates the model scores do not get their predictive power from race/ethnicity. LexisNexis Risk Solutions also found that controlling for a certain race or ethnicity did not change the impact of the insurance score on predicted risk.

In conclusion, the quantitative tests that LexisNexis Risk Solutions conducted for the above models showed no evidence of unfair bias on the basis of race/ethnicity.

## TRANSUNION

TransUnion is one the largest credit reporting agencies in the United States and one of the largest providers of credit-based insurance scores (CBIS) to private passenger auto insurers. For this reason, the company has for many years engaged in research demonstrating the actuarial validity of using CBIS in predicting insured losses. For example, the company has tested the impact of removing CBIS from rate plans and found that:[41]

- Rating plans become less accurate, reducing the range of prices available to consumers.
- Nearly 60 percent of consumer will face higher prices.
- Rating characteristics important to financial hardship, including lapse in prior insurance, liability only coverage, and non-homeowners/renters, will take on more weight, potentially resulting in higher premiums.
- Consumers of all risk segments, not just those with better scores, will likely experience higher rates.

The findings are consistent with findings from the 2007 FTC report and academic studies discussed earlier in this paper.

More recent TransUnion research seeks to address questions related to model fairness and equity raised by the NAIC, the state of Colorado, and others.[42] TransUnion's analysis focuses on two primary concerns raised by regulators and consumer advocates:

- Does CBIS effectively predict insurance losses within racial and ethnic groups?
- Is CBIS closely related to race/ethnicity?

41 TransUnion, "Ensuring Equity: The Role of Data Providers in the Fairness Debates." (September 2022).

42 *Ibid.*

To address these questions, TransUnion utilized a sample of 40 million personal auto records for the years 2010–2012. Bayesian Improved Surname Geocoding (BISG) was then used to estimate the race/ethnicity for each consumer.[43] TransUnion credit-based insurance scores were appended to each consumer record. By comparing the difference in indicated risk from a rating model with no control for race/ethnicity and a second model with control for race/ethnicity, TransUnion determined that indicated risk across the range of CBIS (i.e., consumers with poor, average, good credit) does not significantly change after controlling for race/ethnicity. The analysis therefore demonstrates that:

(i) Insurance scores rank order and predict insurance risk well within BISG racial and ethnic groups, and therefore are not unfairly discriminatory, and

(ii) Insurance scores are not closely related to BISG race/ethnicity.

Again, TransUnion's findings are consistent with prior research by state regulators, the federal government, and academic researchers. The TransUnion analysis also demonstrates that results using the BISG methodology for estimating race/ethnicity are consistent with numerous previous studies conducted using ZIP-code level demographic information for race/ethnicity derived from U.S. Census Bureau data.

## VERISK

Verisk is a leading provider of data, analytics, and risk assessment solutions to the insurance industry. Verisk, like TransUnion and other data providers, is committed to demonstrating that the data and analysis it provides are fair and equitable across all races and ethnicities.

In support of that goal, Verisk recently conducted a simulation study in which a race variable (based on 2020 ZIP-code level race distributions from the U.S. Census Bureau) was randomly assigned to each record within a sample of 90 million private passenger auto insurance records. Using a rating model that included all traditional rating variables and performing the simulation 20 times, Verisk analyzed the impact of a theoretical model in which race was included and compared that to a model with no race variable and a control model in which race was included but not used in pricing.

Verisk's innovative approach found that race is not predictive of loss in the presence of all other variables typically included in a private passenger auto insurance rating model. The study's conclusions, therefore, are consistent with decades of prior research indicating that appropriately-specified rating models do not result in unfair discrimination based on race/ethnicity.

43 Bayesian Improved Surname Geocoding is a methodology developed by the RAND Corporation designed to help U.S. organizations produce accurate, cost-effective estimates of racial and ethnic disparities within datasets. Details on how the RAND BISG methodology works are available at: **https://www.rand.org/health-care/tools-methods/bisg.html**.

# SUMMARY & CONCLUSIONS

Assuring the price policyholders pay for insurance is fair has been a principal concern of insurance regulators and insurers for well over a century. The first modern rating laws in the United States, enacted in the early 20th century, defined unfair discrimination as charging different rates to persons with "risks of a like kind and hazard"—making explicit in law the linkage between risk-based pricing as a necessary condition for fairness. Today, the concept of fairness anchors the bedrock principle of contemporary ratemaking and rate regulation—that actuarially sound rates must be reasonable and not excessive, inadequate, or unfairly discriminatory.

Although the concept of risk-based pricing has for more than a century been firmly established both in law and actuarial principles, and its essential role in preserving not only fairness in rates but also insurer solvency and competition well understood, insurers find themselves continually engaged in defense of this concept. This is particularly true over the past 30 years, a period during which financial services regulators increased their focus on issues related to the pricing of—and access to—financial services, including insurance, in urban markets.

Interest in these issues has stimulated voluminous research by regulators, academics, and the federal government into potential unfair discrimination in pricing and underwriting of insurance products. This paper provided a summary of findings from this research and identifies connections between the conclusions researchers have drawn over the span of decades.

The clear and consistent key finding across studies and over time is that insurance pricing does not result in unfair discrimination. This conclusion is as true for research conducted in the 1990s as it is for very recent research undertaken in the 2020s. Research has also yielded many valuable additional insights related to risk/cost-based insurance pricing and underwriting, including a wide range of positive economic, social, and behavioral outcomes.

*The clear and consistent key finding across studies and over time is that insurance pricing does not result in unfair discrimination.*

Renewed policymaker interest in prohibiting or restricting the use of certain actuarially-proven ratemaking variables in automobile and homeowners insurance over the past few years has once again ignited a debate over the fairness of rates. Yet, when subjected to rigorous testing, the hypothesis that use of these variables results in unfair discrimination against protected classes is again firmly rejected.

Policymakers at all levels, consumers, and insurers themselves should be heartened with the remarkable degree of consistency across the expansive body of research into unfair discrimination. The consistency across time, researcher, analytical technique, and data analyzed suggest that the research findings discussed in this paper are robust and durable.

Consistent rejection of the hypothesis that insurer pricing and underwriting are unfairly discriminatory should provide regulators with the confidence to allow insurers to operate without unreasonable restrictions in terms of both underwriting and pricing. A century of experience and decades of research demonstrate that risk-based pricing in competitive insurance markets results in a multitude of benefits to consumers, including a fair and equitable price for insurance.