

# Report on Personal Auto Insurance Markets and Technological Change

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FEDERAL INSURANCE OFFICE, U.S. DEPARTMENT OF THE TREASURY

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### Glossary

2017 Study	.....	FIO, <i>Study on the Affordability of Personal Automobile Insurance</i> (2017)
Affected Persons	.....	Traditionally underserved communities and consumers, minorities, and low- and moderate-income persons
Affordability Index	.....	Metric for analyzing personal auto insurance affordability as described in the 2017 Study
AI	.....	Artificial intelligence
AP ZIP Codes	.....	ZIP Codes in which Affected Persons are the majority of the population
BI	.....	Third party bodily injury liability auto insurance coverage
FIO	.....	Federal Insurance Office
FR Limits	.....	Financial responsibility limits; i.e., state-mandated minimum personal auto insurance coverage, which vary by state
LAE	.....	Loss adjustment expenses
LMI	.....	Low- and moderate-income
May 2021 RFI	.....	Monitoring Availability and Affordability of Auto Insurance; Assessing Potential Evolution of the Auto Insurance Market, 86 Fed. Reg. 28,681 (May 27, 2021)
NAIC	.....	National Association of Insurance Commissioners
Non-FR Limits	.....	Personal auto insurance coverage that exceeds state mandated FR Limits
PD	.....	Third party property damage liability auto insurance coverage
NYDFS	.....	New York State Department of Financial Services
PIP	.....	Personal injury protection insurance coverage
Premium-to-Income Ratio	.....	FIO metric for analyzing personal auto insurance costs used in this Report
Proxy Factors	.....	Customer information that may be beyond the customer’s control or may not seem directly related to hazards associated with the operation of an auto (e.g., age, gender, marital status, credit history, and educational level)
Report	.....	This Report on Personal Auto Insurance Markets, Technological Change, and State Insurance Regulation
Treasury	.....	U.S. Department of the Treasury
UBI	.....	Usage-based insurance
UM	.....	Uninsured motorist insurance coverage
UIM	.....	Underinsured motorist insurance coverage

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## I. INTRODUCTION

This is the second report (Report) by the Federal Insurance Office (FIO) focusing on personal auto insurance.<sup>1</sup> This Report has been informed by FIO’s analysis and by stakeholder input, including comments submitted in response to FIO’s request for information on personal auto insurance.<sup>2</sup> It is based on data through year-end 2022, which is the most recent year for which detailed auto insurance information is available to FIO.<sup>3</sup> In addition to discussing auto insurance costs, the Report addresses technological change in the personal auto insurance sector and includes an overview of the auto insurance underwriting process, including premium setting and ratemaking, as well as state rate regulation, to inform policymakers, consumers, and other stakeholders.

### A. Highlights and Trends

- **Auto insurance is significant for the economy, insurers, and consumers.** Most Americans rely on private automobiles for transportation and, with one exception, all states and the District of Columbia require vehicle owners to maintain personal liability auto insurance. Personal auto insurance premiums were about 35.8 percent of the entire U.S. property and casualty insurance market in 2023. The COVID-19 pandemic likely significantly affected costs from 2020 through 2022. See [Section II](#).
- **Between 2015 and 2022, premiums for minimum required auto insurance coverage increased, loss severity increased, and loss frequency decreased.** This Report discusses the cost of the minimum, state-mandated personal auto insurance coverage, known as financial responsibility limits (FR Limits, listed in [Appendix A](#)). FR Limits policies are approximately 18 percent of the overall personal auto market. The average annual premium for a personal auto insurance policy at FR Limits increased between 2015 and 2022, from \$416 to \$550.<sup>4</sup> The average loss severity for FR Limits policies increased from \$5,127 in 2016 to \$6,182 in 2022. The loss frequency for FR Limits policies declined from 6.07 accidents per 100 exposures in 2016 to 4.57 accidents per 100 exposures in 2022. See [Section III](#).
- **State regulators are reviewing insurers’ continued use of proxy factors such as age, credit history, education level, gender, and marital status in the underwriting of personal auto insurance.** The term “proxy factors,” as used in this Report, refers to

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<sup>1</sup> For FIO’s first study, see FIO, *Study on the Affordability of Personal Automobile Insurance* (2017), [https://home.treasury.gov/system/files/311/FINAL%20Auto%20Affordability%20Study\\_web.pdf](https://home.treasury.gov/system/files/311/FINAL%20Auto%20Affordability%20Study_web.pdf) (2017 Study).

Among other things, FIO’s statutory authorities include monitoring the affordability and availability of all lines of insurance, except health insurance, for traditionally underserved communities and consumers, minorities, and low- and moderate-income persons. See 31 U.S.C. § 313(c)(1)(B).

<sup>2</sup> Monitoring Availability and Affordability of Auto Insurance; Assessing Potential Evolution of the Auto Insurance Market, 86 Fed. Reg. 28,681 (May 27, 2021) (Auto Insurance RFI). To review responses to the Auto Insurance RFI, see “Monitoring Availability and Affordability of Auto Insurance RFI,” Regulations.gov, May 27, 2021, <https://www.regulations.gov/document/TREAS-DO-2021-0010-0001/comment>.

<sup>3</sup> For more information on the data used, see [Section III.A](#).

<sup>4</sup> All dollar amounts presented in this Report are in nominal terms.

customer information that may be beyond a customer’s control or may not seem directly related to hazards associated with driving an auto. State laws generally permit insurers to use actuarially supported proxy factors in setting insurance rates, meaning that actuarial analyses find correlations between a given factor and loss frequency or severity. The National Association of Insurance Commissioners (NAIC), some state insurance regulators, and some market participants are reviewing the appropriateness of certain proxy factors, including whether their use limits economic mobility. See [Section IV](#).

- **Technology, including the use of artificial intelligence, is shaping the future of personal auto insurance.** The Report discusses the potential effects of technological changes such as telematics (i.e., technology that allows insurers to directly monitor actual driving behaviors), including usage-based insurance (UBI) and artificial intelligence (AI), and how such changes may bear on insurers’ use of proxy factors. Such technologies may align premiums more closely with relevant driving behavior, but may also raise consumer concerns about security, privacy, and transparency. State insurance regulators and other stakeholders are evaluating the public policy implications of AI. See [Section V](#).

## **B. Recommendations**

FIO recommends:

### **Auto Insurance Costs, Loss Frequency, and Loss Severity**

1. State insurance regulators should continue to monitor and analyze the cost and availability of personal auto insurance for consumers.
2. Insurers and regulators should build on existing efforts to reduce the frequency and severity of auto accidents to lower auto insurance costs. New safety technologies such as automatic emergency braking, recently made standard on all passenger vehicles and light trucks (effective not later than 2029) by the National Highway Traffic Safety Administration, should reduce loss frequency and may reduce loss severity.<sup>5</sup>

### **The Use of Proxy Factors in Auto Insurance and State Insurance Regulation**

3. State legislatures, state insurance regulators, and the NAIC should continue to monitor insurers’ use of proxy factors and seek to balance actuarial justifications with stakeholder concerns that proxy factors may limit economic mobility, and also consider developing policies to assess and mitigate the potential for bias and unfair discrimination in the use of proxy factors.
4. The NAIC and its Center for Insurance Policy and Research should study and report on the use of proxy factors and its effect on auto insurance costs and availability and economic

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<sup>5</sup> National Highway Traffic Safety Administration (NHTSA), “NHTSA Finalizes Key Safety Rule to Reduce Crashes and Save Lives,” news release, April 29, 2024, <https://www.nhtsa.gov/press-releases/nhtsa-fmvss-127-automatic-emergency-braking-reduce-crashes>. See also NHTSA, “NHTSA Proposes New Vehicle Safety Standard to Better Protect Pedestrians,” news release, September 9, 2024, <https://www.nhtsa.gov/press-releases/nhtsa-proposes-new-vehicle-safety-standard-protect-pedestrians>.

mobility, using quantitative data to inform this work. This research could assess how the use of proxy factors affects the cost of auto insurance for traditionally underserved communities and consumers, minorities, and low- and moderate-income persons.

### **Technology, AI, and the Auto Insurance Sector**

5. State insurance regulators and the NAIC should continue to focus on auto insurers' use of AI and the effects of its increased use on consumers, cybersecurity, data privacy, and data integrity within the sector. The NAIC's model bulletin on AI, and the recent efforts of states in this area, may serve as useful models for other states. State insurance regulators and the NAIC should also consider expanding these efforts to focus on the role of AI in other relevant areas, such as claims management and settlement practices.
6. Given the increased and rapidly evolving use of AI by the auto insurance sector, the NAIC should update its 2022 Private Passenger Artificial Intelligence/Machine Learning surveys every two years to inform state insurance regulators' adoption of governance, risk management controls, and internal audit standards that could assist regulators in their efforts to protect consumers from potential risks associated with AI. FIO will continue to assess the use of AI and its potential benefits and risks in the auto insurance sector, including through stakeholder engagement.

## II. BACKGROUND

### A. The Importance of Auto Insurance

Auto insurance is significant for the national economy, the insurance industry, and consumers. Personal auto insurance premiums were approximately \$318 billion in 2023, about 35.8 percent of the entire U.S. property and casualty insurance market.<sup>6</sup> Personal auto insurance is essential for transportation because, without it, the risk of financial loss from auto accidents would be prohibitively expensive for many drivers and passengers to bear.<sup>7</sup> Most Americans rely on access to private autos to get to work. In 2022, 68.7 percent of Americans drove alone to work, 8.6 percent carpooled, 3.1 percent took public transportation, and 2.9 percent biked or walked.<sup>8</sup> The high reliance on autos may be due in part to the fact that 45 percent of Americans have no access to public transit.<sup>9</sup> Auto insurance also enables auto financing for consumers, since lenders require borrowers to insure vehicles that borrowers use as collateral.<sup>10</sup> Another benefit of auto insurance is that insurers can incentivize and promote adoption of auto safety features and safe driving behavior through premium discounts and other means.

Except for New Hampshire, all states and the District of Columbia require vehicle owners to maintain personal auto liability insurance, but the minimum required amount of coverage (FR Limits) varies.<sup>11</sup> Common types of personal auto insurance coverage are described in [Section II.C](#). Laws mandating coverage of at least FR Limits help to ensure that a source of payment will be available to compensate victims of negligent drivers, in whole or in part.

### B. Personal Auto Insurance Market Segments

The personal auto insurance marketplace is generally segmented by risk categories into (1) the voluntary market and (2) the residual (or “shared”) market. This Report focuses on FR limits policies in the voluntary market. The voluntary market is the largest market segment, accounting for about 99 percent of all personal auto earned premium in 2020.<sup>12</sup> The voluntary market

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<sup>6</sup> See S&P Global Market Intelligence (S&P Global).

<sup>7</sup> See, e.g., Eric Grant, “The Social and Economic Value of Insurance,” *The Geneva Association*, September 2012, 5, [https://www.genevaassociation.org/sites/default/files/research-topics-document-type/pdf\\_public/ga2012-the-social-and-economic-value-of-insurance.pdf](https://www.genevaassociation.org/sites/default/files/research-topics-document-type/pdf_public/ga2012-the-social-and-economic-value-of-insurance.pdf).

<sup>8</sup> See Michael Burrows & Charlynn Burd, “Commuting in the United States: 2022,” *U.S. Census Bureau*, February 2024, <https://www2.census.gov/library/publications/2024/demo/acsbr-018.pdf>.

<sup>9</sup> “Public Transportation Facts,” American Public Transportation Association, <https://www.apta.com/news-publications/public-transportation-facts/>.

<sup>10</sup> See “What Is Force-Placed Insurance?,” Consumer Financial Protection Bureau (CFPB), last updated August 28, 2020, <https://www.consumerfinance.gov/ask-cfpb/what-is-force-placed-insurance-en-827/>.

<sup>11</sup> See, e.g., “Background on: Compulsory Auto/Uninsured Motorists,” Insurance Information Institute (III), last updated March 8, 2024, <https://www.iii.org/article/background-on-compulsory-auto-uninsured-motorists>; “Uninsured Motorists,” NAIC, <https://content.naic.org/cipr-topics/uninsured-motorists>. New Hampshire does not require auto insurance if a driver complies with alternative financial responsibility requirements. See “Uninsured Motorists,” NAIC. New Hampshire also requires insurers to offer the same coverage and limits to all applicants for personal auto insurance. For more details on state personal auto insurance requirements, see [Appendix A](#).

<sup>12</sup> See generally NAIC, *2020/2021 Auto Insurance Database Report* (2024), <https://content.naic.org/sites/default/files/publication-aut-pb-auto-insurance-database.pdf>.



includes the “preferred market” (typically, drivers with a clean driving record or other factors based on which insurers view them as at lower risk than other drivers), the “non-standard market” (including drivers viewed as presenting elevated risk, such as new drivers, drivers with moving violations, drivers with rare or unusual cars, and/or drivers with a history of insurance policy cancellations or non-renewal), and the “standard market” (drivers that are in neither the preferred nor the non-standard market).<sup>13</sup> The residual market is generally reserved for drivers with the highest expected likelihood of submitting a claim and who are therefore unable to obtain coverage from insurers in the voluntary market. Generally, premiums are highest for drivers in the residual market, followed by the non-standard market, and the lowest premiums are for drivers in the standard and preferred markets.<sup>14</sup>

### C. Auto Insurance Coverages and Uninsured Drivers

An auto insurance policy is a contract between a policyholder and an insurance company. Subject to its terms and conditions, an auto insurance policy generally indemnifies the policyholder for compensatory damages because of an auto accident and may also compensate passengers, drivers, or others for damages.<sup>15</sup> Auto insurance policies may be for a person (personal auto insurance, which is the subject of this Report) or business (commercial).<sup>16</sup>

Personal auto insurance policies can provide several different types of coverage, including:

- **Bodily Injury** is for costs associated with bodily injury to others.
- **Property Damage** is for costs associated with damage to the property of others.
- **Personal Injury Protection (PIP) or Medical Payments** reimburses the insured driver and passengers for covered medical expenses. PIP, which is available in “no-fault” states, can also cover lost wages and funeral costs.<sup>17</sup>
- **Collision** reimburses the insured auto owner for damages to the insured vehicle caused by a collision with another object.

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<sup>13</sup> See FIO, *2017 Study*, 5; “A Consumer’s Insurance Glossary,” Washington State Office of the Insurance Commissioner, <https://www.insurance.wa.gov/consumers-insurance-glossary>.

<sup>14</sup> See, e.g., Consumer Federation of America, *Lower-Income Households and the Auto Insurance Marketplace: Challenges and Opportunities* (2012), <https://consumerfed.org/reports/cfa-report-title-forthcoming/>.

<sup>15</sup> See, e.g., NAIC, *A Consumer’s Guide to Auto Insurance* (2022), <https://content.naic.org/sites/default/files/publication-aut-pp-consumer-auto.pdf>. However, the benefit (i.e., the protection against loss) might be non-existent for indigent tortfeasors. See, e.g., Stephen G. Gilles, *The Judgment-Proof Society*, 63 Wash. & Lee L. Rev. 603, 605 (2006) (“Knowing that they can collect at best a fraction of the plaintiff’s claim even if they litigate and win, plaintiffs’ attorneys typically decline to litigate meritorious tort claims against uninsured or underinsured individuals. In the absence of liability insurance, plaintiffs are effectively barred from bringing suit unless the tortfeasor is an asset-rich corporation or an affluent individual who neglects to take elementary precautions to protect his or her assets from tort liability.”).

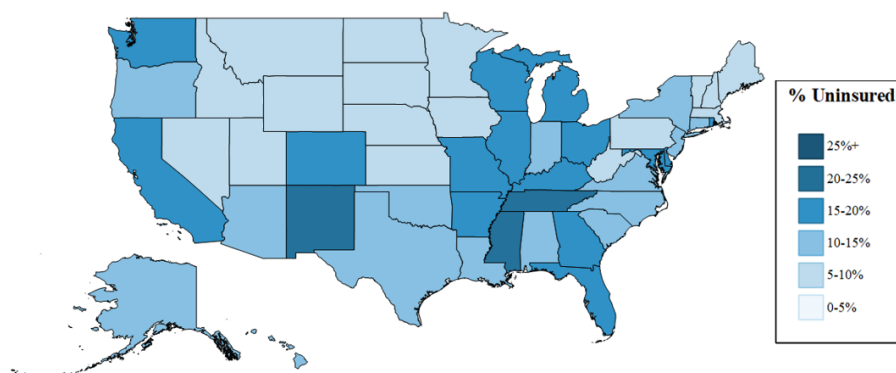
<sup>16</sup> Personal (or private passenger) vehicles generally are four-wheel motor vehicles that are either owned or leased, including cars, light trucks, and SUVs. See, e.g., “Auto Insurance,” NAIC, <https://content.naic.org/cipr-topics/auto-insurance>.

<sup>17</sup> See NAIC, *A Consumer’s Guide to Auto Insurance*.

- **Comprehensive** reimburses the insured auto owner for damages to the insured vehicle caused by covered incidents other than a collision, such as a flood, vandalism, etc.
- **Uninsured Motorist (UM)** reimburses the insured auto owner and occupants for bodily injury and property damage when an accident is caused by a third-party uninsured driver, or for hit-and-run accidents.<sup>18</sup>
- **Underinsured Motorist (UIM)** reimburses the insured auto owner and occupants for bodily injury and property damage when an accident is caused by a third-party driver whose insurance coverage is insufficient to pay the accident costs.<sup>19</sup> Drivers in states that have lower liability insurance requirements and low or no PIP requirements may be incentivized to purchase UIM coverage.

UM and UIM coverages are widely available and are mandatory in 23 states. An additional 19 states require UM coverage unless declined in writing.<sup>20</sup> One insurance industry organization estimates that, despite potentially steep penalties for non-compliance with state requirements to have personal auto insurance, 14 percent of drivers did not maintain the legally required insurance coverage in 2022.<sup>21</sup> See Figure 1.

**Figure 1: Estimated Percentage of Uninsured Drivers by State, 2022**



Source: Insurance Research Council

<sup>18</sup> A UM policy typically provides third party BI coverage; third party PD coverage for damage caused by an uninsured driver usually requires payment of an additional premium. See, e.g., “Protect Yourself Against Uninsured Motorists,” III, <https://www.iii.org/article/protect-yourself-against-uninsured-motorists>.

<sup>19</sup> See NAIC, *A Consumer’s Guide to Auto Insurance*.

<sup>20</sup> See [Appendix A](#).

<sup>21</sup> See The Insurance Research Council, *Uninsured Motorists, 2017-2022*, (2023), <https://insurance-research.org/research-publications/uninsured-motorists-2>. Depending on the state, fines for driving without insurance can range from \$50 to \$1,500 (for a first offense) and penalties may include license and/or registration suspension for varying periods of time, and potentially may include jail time. See, e.g., Daniel Robinson, “Driving Without Insurance: Penalties for Every State,” *MarketWatch*, last updated October 2, 2024, <https://www.marketwatch.com/guides/insurance-services/driving-without-insurance/>.

Reasons that people may drive without insurance vary, but there is evidence that cost is a factor.<sup>22</sup> Consumers with limited means may forego auto insurance to prioritize paying for basic necessities such as food and shelter.<sup>23</sup> Consumer concerns about increased insurance costs appear to have escalated in recent years, which may correlate with an increased number of uninsured drivers.<sup>24</sup>

#### D. Financial Performance of Personal Auto Insurance

Auto insurers seek to earn profits in two principal ways: underwriting profit and investment earnings. First, insurers collect premiums in exchange for providing insurance coverage; if the amount of earned premiums exceeds the amount of losses and expenses incurred in a given policy year, insurers have earned an underwriting profit for that year. Second, insurers collect premiums on or before the first day of coverage, but do not pay claims until days, months, or even years later, if any claims arise at all. In the time between when an insurer collects a premium and pays a claim, insurers invest the premium and collect investment earnings.<sup>25</sup>

Five ratios of annual insurer payments to premium revenues help market observers track various elements of underwriting profitability:

1. The **loss ratio** is the percentage of every premium dollar paid or set aside (reserved) for losses;
2. The **loss adjustment expense (LAE) ratio** is the percentage of every premium dollar paid or reserved for investigating, managing, and settling claims;
3. The **expense ratio** is the percentage of every premium dollar paid for operating and overhead costs, not including taxes;
4. The **dividend ratio** is the percentage of every premium dollar paid out for policyholder dividends; and
5. The **combined ratio** is the sum total of the loss, LAE, expense, and dividend ratios, and measures underwriting profitability. For example, a combined ratio of 105 means an

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<sup>22</sup> See, e.g., Teresa Wiltz, “States Look to Reduce Ranks of Uninsured Drivers,” *PEW Stateline*, February 20, 2015, <https://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2015/2/20/states-look-to-reduce-ranks-of-uninsured-drivers>. See also Consumer Federation of America, *Uninsured Drivers: A Societal Dilemma in Need of a Solution*, (2013), 5, [https://consumerfed.org/pdfs/140310\\_uninsureddriversasocialdilemma\\_cfa.pdf](https://consumerfed.org/pdfs/140310_uninsureddriversasocialdilemma_cfa.pdf).

<sup>23</sup> See, e.g., Wiltz, “States Look to Reduce Ranks of Uninsured Drivers.”

<sup>24</sup> See, e.g., Suzanne Blake, “America’s Headed for Car Insurance Crisis,” *Newsweek*, January 31, 2024, <https://www.newsweek.com/car-insurance-crisis-americans-cant-afford-economy-1864968> (“Rising insurance costs have been linked to a significant number of young Americans, roughly 45 percent, who say they’ve thought about going without auto insurance because of the expense.”).

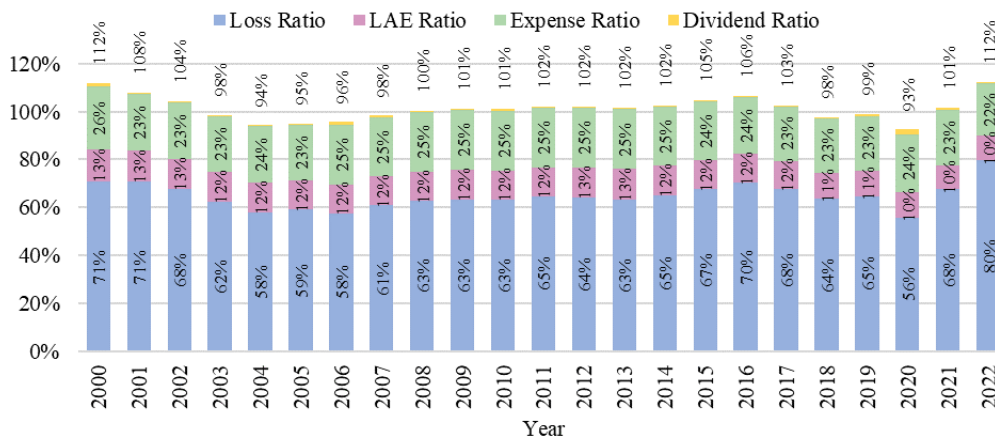
<sup>25</sup> See, e.g., Christopher C. French, “The Role of the Profit Imperative in Risk Management,” 17 U. Pa. J. Bus. L. 1081, 1098 (2015), <https://scholarship.law.upenn.edu/cgi/viewcontent.cgi?article=1492&context=jbl>; NAIC, *U.S. Property & Casualty and Title Insurance Industries – 2021 Full Year Results* (2022), <https://content.naic.org/sites/default/files/inline-files/2021%20Annual%20Property%20%26%20Casualty%20and%20Title%20Industry%20Report.pdf>.

insurer expects to lose \$0.05 for every \$1.00 in premium collected (without accounting for investment outcomes).<sup>26</sup>

Figure 2, below, displays loss, LAE, expense, dividend, and combined ratios for U.S. personal auto insurers from 2000 to 2022. It shows that expense ratios, though uneven, have fallen over the long term, with a high of 26 in 2000 and a low of 22 in 2022, showing that insurers have spent a relatively smaller share on operating and overhead costs. LAE—which measures administrative costs related to investigating, managing and settling claims—trended down over this period, falling from 13 in 2000 to 10 in 2020 through 2022.

These observations demonstrate that losses (rather than expenses) have been the primary determinant of overall underwriting profitability for insurers during this period. Though personal auto insurers earned underwriting profits for several years in the first decade of this century, personal auto insurers had combined ratios under 100 in only three years between 2009 and 2022, meaning that personal auto insurers earned underwriting profits in only three years of that period.<sup>27</sup> As explained above, the combined ratio does not consider investment income. Therefore, an insurer that has a combined ratio greater than 100 may still be profitable after accounting for its investment returns.<sup>28</sup>

**Figure 2: Personal Auto Insurance Underwriting Ratios, 2000-2022**



Source: S&P Global

<sup>26</sup> For definitions of these and other insurance terms, see “Glossary,” IRMI, <https://www.irmi.com/glossary>.

<sup>27</sup> See Jason Woleben, “US Private Auto Insurers Report Historically Bad Underwriting Results in 2022,” *S&P Global Market Intelligence*, May 8, 2023, <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/us-private-auto-insurers-report-historically-bad-underwriting-results-in-2022-75508714>.

<sup>28</sup> For more on the role and results of investment income in insurance, see, e.g., FIO, *Annual Report on the Insurance Industry* (2024), 55–57, [https://home.treasury.gov/system/files/311/2024-09-30%20Clean%20FIO%20AR%20508\\_2.pdf](https://home.treasury.gov/system/files/311/2024-09-30%20Clean%20FIO%20AR%20508_2.pdf).

### III. ASSESSING AUTO INSURANCE COSTS

#### A. Data Sources, Methodology, and Findings

This section begins by outlining the methodology FIO used to update FIO’s 2017 Study and then presents FIO’s analyses of auto insurance costs, with additional details provided in [Appendix B](#) and [Appendix C](#).<sup>29</sup> This Report presents the costs of auto insurance, based on three Premium-to-Income Ratios, for traditionally underserved communities and consumers, minorities, and low- and moderate-income persons (Affected Persons).<sup>30</sup> This Report retains the same 2 percent ratio as used in the 2017 Study to allow time series comparisons and augments this analysis with 1.5 percent and 3 percent Premium-to-Income Ratio analyses for each state. FIO assessed these additional ratios to provide more granular and comprehensive views of potential costs faced by consumers and in recognition that no single Premium-to-Income ratio can define “affordability” for all consumers.

The Premium-to-Income Ratio outcomes developed through FIO’s analysis should further an understanding of auto insurance costs for Affected Persons on a collective basis, as measured at the ZIP Code level.<sup>31</sup> They are not intended to provide guidance for individual insurance budgeting or to measure auto insurance affordability or costs for any single person (for whom they may or may not be representative).

**Data Sources.** This Report is based on insurance premium and related data that are publicly available or that were voluntarily provided to FIO by states and statistical agents. The publicly available data come from the Census Bureau, the Federal Financial Institutions Examination Council, and the U.S. Department of Housing and Urban Development. FIO also appreciates the cooperation of the California and Texas insurance departments.

FIO’s analysis is based on information related to insurance policies with inception dates in calendar years 2015 through 2022 (including the 2015 data previously analyzed in the 2017 Study). It is important to note that the COVID-19 pandemic likely significantly affected driving patterns and other factors affecting costs from 2020 through 2022.<sup>32</sup>

Subject to confidentiality protections of certain proprietary information, this Report relies upon samples of data aggregated at the ZIP Code level. The analyzed data include insured vehicle counts, premiums, claim counts, and loss figures for most states for many policies in the voluntary market written at the applicable state FR Limits. Available premium data include

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<sup>29</sup> FIO, *2017 Study*.

<sup>30</sup> FIO previously used a 2 percent Premium-to-Income Ratio as a threshold because, in 2013 and 2015, U.S. consumers spent about 1.8 percent of average income on vehicle insurance. FIO, *2017 Study*. For more on defining Affected Persons, see *Monitoring Availability and Affordability of Automobile Insurance*, 81 Fed. Reg. 45,372, 45,377–79 (July 13, 2016) (July 16 Notice).

<sup>31</sup> The Report’s analyses primarily rely on ZIP Code Tabulation Areas (ZCTAs), which are geographic representations of the areas covered by ZIP Codes, but for ease of reference, this Report uses the common term “ZIP Codes” throughout.

<sup>32</sup> Comments from several sources suggested that FIO’s work should exclude years impacted by the COVID-19 pandemic. See, e.g., Comment of American Academy of Actuaries (July 26, 2021), <https://www.regulations.gov/comment/TREAS-DO-2021-0010-0013> (American Academy of Actuaries Comment).

bodily injury and property damage coverage, and PIP coverage for states where it is mandatory, but excludes UM and UIM coverage, even in states where one or both of these coverages may be mandatory. FIO also used analytical methods to exclude atypical ZIP Codes, such as military bases, universities, and transportation facilities.

### **Methodology.**

This study presents Premium-to-Income Ratios of Affected Persons living in Affected Person ZIP Codes. Affected Persons are traditionally underserved communities and consumers, minorities; and low- and moderate-income persons.<sup>33</sup> Affected Person ZIP Codes are ZIP Codes in which Affected Persons are a majority of the population (AP ZIP Codes).

For each AP ZIP Code, FIO calculated the average annual premium at FR Limits in the voluntary market and divided the premium by the median household income to determine the Premium-to-Income Ratio.<sup>34</sup> Rather than defining “affordability” by any single Premium-to-Income Ratio of insurance cost to consumer income, this Report presents multiple ratios in recognition that no single ratio can define affordability. Specifically, this Report presents outcomes not only at the 2 percent threshold used in the 2017 Study, but also at 1.5 percent and 3 percent, to include between 88 and 98 percent of the U.S. population. See Figure 3. For example, looking at the fourth line of Figure 3, across the entire U.S. population, 94.16 percent of insured consumers spent less than 2 percent of their income on auto insurance. See Figure 3. The results are summarized in Figure 4 and shown in detail in [Appendix B](#).

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<sup>33</sup> For more information on “majority-minority” persons, see 31 U.S.C. § 313(c)(1)(B) (incorporating by reference the definition established in 12 U.S.C. § 1811, note). For more information on low and moderate-income persons, see Monitoring Availability and Affordability of Auto Insurance, 80 Fed. Reg. 38,277, 38,280 (July 2, 2015); July 2016 Notice, 81 Fed. Reg. at 45,378–81; “Community Reinvestment Act (CRA) Performance Ratings,” Federal Deposit Insurance Corporation, last updated August 25, 2021, <https://crapes.fdic.gov/>. ZIP Codes in non-Metropolitan Statistical Area (MSA) ratings are assessed using the Federal Financial Institutions Examination Council methodology for non-MSA ratings.

<sup>34</sup> The components are discussed in more detail in the July 2016 Notice, 81 Fed. Reg. 45,372.

**Figure 3: Percentage of U.S. Population within ZIP Codes at Certain Premium-to-Income Ratios, 2022**

Premium-to-Income Ratio	% of Total Population	Cumulative % of Total Population
0-0.5%	21.86%	21.86%
0.5-1%	49.88%	71.74%
1-1.5%	16.53%	88.26%
1.5-2%	5.90%	94.16%
2-2.5%	3.09%	97.25%
2.5-3%	1.16%	98.41%
3-3.5%	0.55%	98.97%
4-4.5%	0.45%	99.41%
4.5-5%	0.20%	99.62%
5-6%	0.14%	99.75%
6-7%	0.12%	99.87%
> 7%	0.13%	100.00%

**Findings.** The study shows that every state has at least one AP ZIP Code. The number of residents in AP ZIP Codes with a Premium-to-Income Ratio at or above 1.5 percent is approximately 33.1 million. The number of residents in AP ZIP Codes with Premium-to-Income Ratios at or above 2 percent has fallen from the 18.6 million reported in the 2017 Study to about 16.5 million in 2022. The number of residents in AP ZIP Codes with a Premium-to-Income Ratio at or above 3 percent is nearly 4.5 million. These population figures may include both drivers and non-drivers.<sup>35</sup> Figure 4 is a summary of the national findings, presented in further detail in [Appendix B](#).

**Figure 4: Summary of Findings for AP ZIP Codes in Study**

United States and AP ZIP Codes: Numbers and Populations, 2022			
Total Number of U.S. ZIP Codes Studied	33,056		
Total Number of AP ZIP Codes	9,344		
Total Population in AP ZIP Codes	132,044,095		
AP ZIP Code Populations and Percentages at Certain Premium-to-Income Ratios, 2022			
	>1.5% Premium-to-Income Ratio	>2% Premium-to-Income Ratio	>3% Premium-to-Income Ratio
Total Population in AP ZIP Codes with Certain Premium-to-Income Ratios	33,138,663	16,492,553	4,484,646
% of Population in All AP ZIP Codes	25.1%	12.5%	3.4%

<sup>35</sup> The proportion of people living in AP ZIP Codes has increased from 35.9 percent to 39.9 percent of the overall U.S. population between 2015 and 2022. The overall U.S. population also increased during this time period from an estimated U.S. population of over 320 million in 2015 to over 333 million in 2022. See “U.S. Population Up 5.96% Since 2010,” U.S. Census Bureau, December 20, 2018, <https://www.census.gov/library/visualizations/interactive/population-increase-2018.html>; U.S. Census Bureau, “Growth in U.S. Population Shows Early Indication of Recovery Amid COVID-19 Pandemic,” news release, December 22, 2022, <https://www.census.gov/newsroom/press-releases/2022/2022-population-estimates.html>.

## B. Analyses of Loss Data, Premiums, and Market Share

The 2017 Study and the analysis summarized in Figure 4 consider the cost to obtain insurance at FR Limits only for households in AP ZIP Codes. This section builds on the above analysis by examining premiums at FR Limits in all ZIP Codes to provide more detail and context on the overall market. FIO performed additional analyses of the cost of personal auto insurance by population density, median household income, and minority population. To further enhance the comparability across FR Limits policies, the cost for PIP coverage is excluded in this analysis because only a minority of states require this coverage.

Loss frequency and loss severity (among other factors) affect premiums for personal auto insurance.<sup>36</sup> Incurred losses, which have increased over the last several years, may be affected by multiple factors, including more costly repairs due to advanced vehicle technology, inflationary pressures, more distracted driving, and increasing reinsurance and medical costs.<sup>37</sup>

The data collected by FIO for FR Limits policies had fewer data points for losses compared to data points for exposures and premiums. This Report assesses loss frequency and loss severity, defined as:

**Loss Frequency = (number of incurred losses / number of earned exposures)  
per 100 insured vehicles**

**Loss Severity = (total incurred losses in dollars / number of incurred losses)<sup>38</sup>**

The average loss severity of all FR Limits policies at an aggregate ZIP Code level increased from \$5,127 in 2016 to \$6,182 in 2022, as shown in Figure 5 (left column). The loss frequency of FR Limits policies declined between 2016 and 2022 from 6.07 accidents per 100 exposures to 4.57 accidents per 100 exposures, as also shown in Figure 5 (right column).

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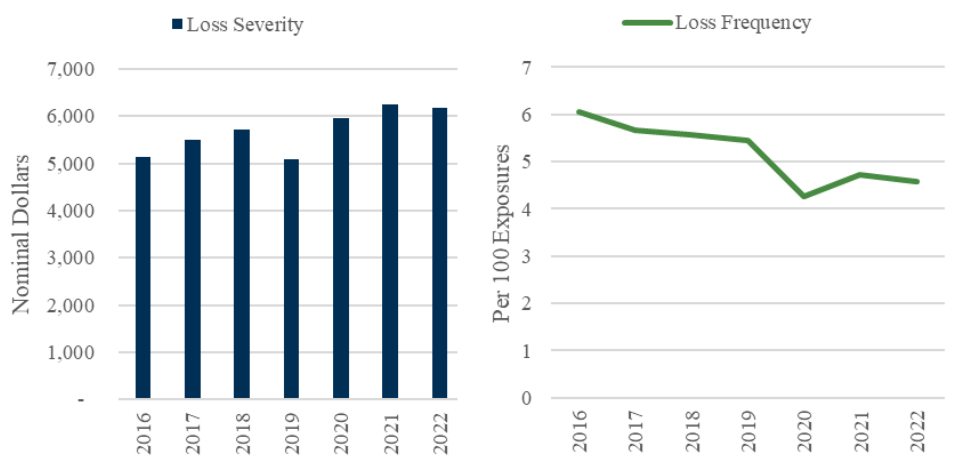
<sup>36</sup> For more on how insurers set premiums, see [Section IV.A](#).

<sup>37</sup> See, e.g., Martin Grace, *et al.*, “Cost Trends and Affordability of Automobile Insurance in the U.S.,” *Journal of Insurance Regulation*, Vol. 38, No. 7 (2019), <https://content.naic.org/sites/default/files/jir-za-38-07-affordability-automobile.pdf>; Kenneth Araullo, “U.S. Personal Lines Insurance Retains Negative Outlook – A.M. Best,” *Insurance Business*, December 5, 2023, <https://www.insurancebusinessmag.com/us/news/breaking-news/us-personal-lines-insurance-retains-negative-outlook--am-best-468964.aspx>. See also, “Why Did My Auto Insurance Costs Go Up Even When I Didn’t File a Claim?” III, <https://www.iii.org/article/why-did-my-auto-insurance-costs-go-up-even-when-i-didnt-file-a-claim>.

<sup>38</sup> “Incurred losses” means the total amount an insurer has paid, including loss reserves, for a claim in a given policy year. See “Incurred Losses,” IRMI, <https://www.irmi.com/term/insurance-definitions/incurred-losses>; NAIC, *2020/2021 Auto Insurance Database Report*, 2.



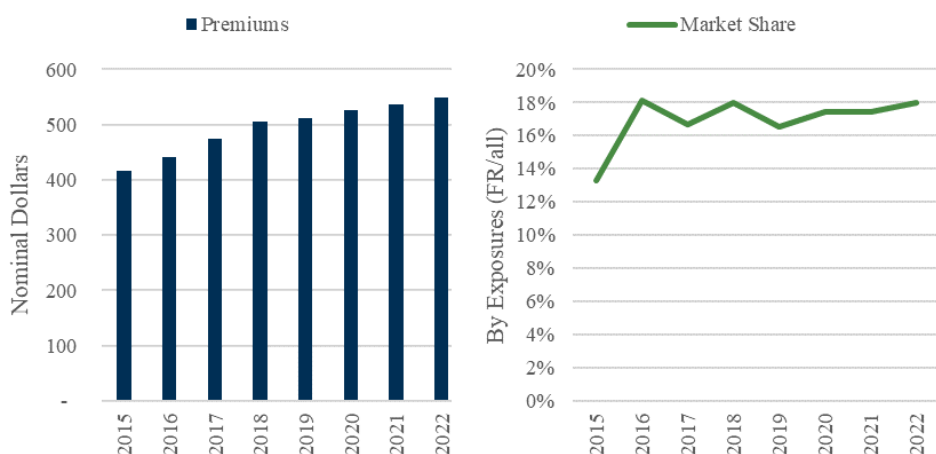
**Figure 5: Loss Severity and Loss Frequency for FR Limits Policies, 2016-2022**



Source: Statistical agent claims data

During the same period, average annual premiums for FR Limits policies steadily increased, from \$416 in 2015 to \$550 in 2022, as shown in Figure 6 (left column). The percentage market share of FR Limits policies remained relatively constant (between 16.5 and 18.1 percent) after a large increase in 2016, as shown in Figure 6 (right column).

**Figure 6: Premiums and Market Shares for FR Limits Policies, 2015-2022**



Source: Statistical agent claims data

Analyses of loss frequency, loss severity, and auto insurance costs and market shares for FR Limits policies in 2022 by median household income, population density, and minority population are presented in [Appendix C](#). These analyses do not attempt to assess other potentially correlating factors to cost and market share, such as population density or loss frequency. Figures C.1, C.2, and C.3 show average loss frequency and average loss severity across median household income levels, population density, and percentage minority population in a ZIP Code cohort, respectively. Figures C.4, C.5, and C.6 show FR Limits policy premiums and market share across median household incomes, population density, and percentage minority population in a ZIP Code cohort, respectively.

#### IV. AUTO INSURANCE PREMIUM CALCULATION AND STATE RESTRICTIONS ON UNFAIR DISCRIMINATION AND CERTAIN PROXY FACTORS

This section describes the three components of the insurance premium calculation process: underwriting, premium setting, and ratemaking. It also discusses the role of state insurance regulators in approving auto rates. Finally, this section highlights aspects of state regulation of insurance rates designed to prohibit unfair discrimination, and state legislative and regulatory responses to some of the proxy factors that insurers may use in premium calculations.

##### A. Underwriting, Premium Setting, and Ratemaking

The premium that consumers pay for their auto insurance coverage is the result of insurers' underwriting, premium setting, and ratemaking processes, subject to regulatory oversight (described in [Section IV.B](#)). Insurers set rates (i.e., premium per unit of exposure) based on analyses of their past losses. Usually, insurers must submit these rates to state regulators for approval. The regulator-approved rates generally incorporate various credits or debits based on an individual risk's characteristics, such as loss experience, or bundling (i.e., purchasing multiple types of coverage together, such as personal auto insurance and homeowners insurance). As part of the underwriting process, insurers determine the individual risk characteristics of consumers seeking coverage.

When underwriting, an insurer decides whether to offer coverage to a prospective customer and at what cost. The underwriting process includes evaluating several risks, including the risk of the customer failing to make premium payments, the risk that the customer will get into an accident and how severe that accident might be, and the risk that the customer will make a claim. The insurer usually assesses these risks by considering the prospective customer's personal information in the insurance policy application; by analyzing factors including traffic tickets, age, income, and other proxy factors (discussed further in [Section IV.B](#) and [Section IV.C](#)); and by using models and algorithms.<sup>39</sup> Typically, each insurer makes underwriting decisions using its own underwriting guidelines.<sup>40</sup>

Premium setting is the process by which an insurer uses information obtained from underwriting to determine the appropriate amount to charge a customer in order to cover the insurer's anticipated losses and expenses, and still earn a reasonable profit.<sup>41</sup> Losses and LAE are the largest elements of the cost of an insurance policy to the insurer. The estimation of total losses includes losses from several potential causes, including loss development (i.e., additional losses that may occur following the initial claim, or losses that, based on past experience, have occurred

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<sup>39</sup> See, e.g., "Underwriting and Rating," Alabama Department of Insurance, <https://www.aldoi.gov/consumers/AutoUnderwriting.aspx>.

<sup>40</sup> See, e.g., Geoff Werner & Claudine Modlin, *Basic Ratemaking* (Casualty Actuarial Society, May 2016), 16, 34, [https://www.casact.org/sites/default/files/old/studynotes\\_werner\\_modlin\\_ratemaking.pdf](https://www.casact.org/sites/default/files/old/studynotes_werner_modlin_ratemaking.pdf).

<sup>41</sup> See, e.g., "Auto Insurance," NAIC, last updated January 26, 2023, [https://content.naic.org/cipr\\_topics/topic\\_auto\\_insurance.htm](https://content.naic.org/cipr_topics/topic_auto_insurance.htm). "Rates" and "premiums" are often used interchangeably but a rate is the unit of cost for insurance while the premium paid by the customer reflects the rate times the number of units purchased.

but have not been reported).<sup>42</sup> Typically, insurers use multiple factor actuarial modeling to predict future losses based on relevant historical experience (with adjustments). The factors for personal auto insurance premium setting considered by insurers could include, among others, driving experience and driving record; vehicle make, model, and use; miles driven; previous insurance coverage; requested coverages and deductibles; loss history; and proxy factors such as age, gender, marital status, and credit history or credit-based insurance score. The availability of consumer telematics data also may be a factor (see [Section V](#)). Market competition may affect auto insurance premium setting.<sup>43</sup> Some insurers will weigh certain factors more heavily than others when determining rates and premiums. Some factors may not be part of the premium setting process but instead might be used for underwriting or other functions.

The possibility of a large loss also plays a critical role in auto insurance premium setting. Policies providing coverage at only FR Limits generally minimize the possibility of a large liability loss (because the loss is capped by the limits, which are small relative to non-FR Limits policies). The average personal auto liability claim was \$5,313 for property damage and \$24,211 for bodily injury in 2022, both of which are within typical FR Limits.<sup>44</sup> Because the average personal auto claim is within typical FR Limits, auto insurance coverage in excess of FR Limits is likely to be less expensive per dollar of coverage than purely FR Limits coverage.<sup>45</sup>

Ratemaking is the process by which insurers set rates on both an aggregate basis and a risk segment basis, which groups together risks that have similar loss potential. This analysis by insurers requires determining which criteria (e.g., statistical, operational, social, and legal considerations) effectively segment risks into categories with similar loss experience.<sup>46</sup> Different values of rating variables (i.e., characteristics that lead to statistically significant differences in loss experience) are “levels” that should represent distinct groups of risks with similar expected losses.<sup>47</sup>

Ratemaking seeks to avoid adverse selection (i.e., where an insurer may attract and retain only higher-risk policyholders) by allowing rates that result in a distribution of risks across a spectrum of consumers. Adverse selection may be the result of an insurer failing to segment risks on the

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<sup>42</sup> While “loss” and “claim” are often used interchangeably, in this Section “loss” means an amount of compensation paid or owed to (or on behalf of) the policyholder while “claim” means the policyholder’s (or injured party’s) demand for compensation.

<sup>43</sup> The top five writers of personal auto insurance share nearly 60 percent of the personal auto insurance market nationwide and the top 10 writers cover almost 75 percent of the market. See “Facts + Statistics: Insurance Company Rankings,” III, <https://www.iii.org/fact-statistic/facts-statistics-insurance-company-rankings>. However, no state has fewer than 50 auto insurers and 41 states have at least 100 insurers offering coverage for private vehicles. See S&P Global.

<sup>44</sup> “Facts + Statistics: Auto Insurance,” III, <https://www.iii.org/fact-statistic/facts-statistics-auto-insurance>. See also [Appendix A](#) (noting lowest state required FR Limits for PD is \$5,000, and that while a few states impose FR Limits for BI as low as \$10,000, most require \$25,000 or above).

<sup>45</sup> See, e.g., Shani Clarke, “Demystifying the Origins and Applications of Original Loss Curves,” *Verisk*, <https://www.verisk.com/en-gb/insurance/campaigns/demystifying-the-origins/>.

<sup>46</sup> Werner & Modlin, *Basic Ratemaking*, 150.

<sup>47</sup> Werner & Modlin, *Basic Ratemaking*, 150, 154, 155. See also Casualty Actuarial Society and III, *Insurance Rating Variables: What They Are and Why They Matter* (2019), [https://www.casact.org/sites/default/files/2021-06/Insurance\\_rating\\_variables\\_white\\_paper.pdf](https://www.casact.org/sites/default/files/2021-06/Insurance_rating_variables_white_paper.pdf).

basis of meaningfully predictive characteristics used by other insurers or failing to charge appropriate rate differentials similar to those charged by competitors.<sup>48</sup> An insurer may also discover a new characteristic that differentiates risk which is not used by competitors, and may either use it as a new rating variable or use it for other purposes, such as marketing or risk selection. Doing so may attract and retain lower-risk policyholders. Several multivariate modeling techniques are routinely used in the ratemaking process to minimize uneven risk distribution.<sup>49</sup>

## **B. State Regulation of Rates and Prohibited Discrimination**

State regulation of personal auto insurance is part of the broader state regulation of insurers' business practices, also known as market conduct regulation.<sup>50</sup> Market conduct regulation focuses on an insurer's performance of its contractual obligations to policyholders and general obligations to claimants, as well as compliance with state laws and regulations (other than those laws and regulations concerned with financial condition and solvency). The NAIC describes the goals of market conduct regulation as: (1) ensuring that consumers are charged fair and reasonable prices for insurance products, (2) ensuring that consumers have access to beneficial, legally compliant products, and (3) protecting consumers against insurers that do not operate in a legal and fair manner.<sup>51</sup> Market conduct regulation also includes preventing unfair discrimination and approving personal auto insurance rates that are high enough to maintain insurers' solvency and thus their ability to pay claims, but not so high as to be excessive.

States use various regulatory approaches in seeking to ensure that personal auto insurance rates comply with state law. The most common regulatory structure states use to monitor insurance rates is known as "file-and-use," which requires insurers to file their rates with the state insurance regulator but allows them to begin applying the filed rates before obtaining regulatory approval.<sup>52</sup> As of 2019, twenty-eight states and the District of Columbia use some variation of file-and-use rate regulation for personal auto insurance.<sup>53</sup> File-and-use rate regulation is a subset of "competitive rating," meaning that the regulator relies on the market to keep insurance rates consistent with underlying economics, but still reviews rates and may disallow those it finds inappropriate.<sup>54</sup> States may also assess compliance with market conduct regulation through examinations.

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<sup>48</sup> See, e.g., Werner & Modlin, *Basic Ratemaking*, 154.

<sup>49</sup> Werner & Modlin, *Basic Ratemaking*, 155, 186.

<sup>50</sup> State regulation of personal auto insurance also includes prudential regulation, which focuses on protecting policyholders by seeking to ensure the financial stability of insurers and by supporting a strong and viable insurance marketplace.

<sup>51</sup> See "Market Conduct Regulation," NAIC, [https://content.naic.org/cipr\\_topics/topic\\_market\\_conduct\\_regulation.htm#](https://content.naic.org/cipr_topics/topic_market_conduct_regulation.htm#).

<sup>52</sup> Other rate regulatory frameworks include prior approval, use and file, no file or open competition, and flex rating. See, e.g., NAIC, *Product Filing Review Handbook* (2024), 11, <https://naic.soutrnglobal.net/Portal/Public/en-US/DownloadImageFile.ashx?objectId=10642&ownerType=0&ownerId=6317>.

<sup>53</sup> Consumer Federation of America, *Auto Insurance Regulation: What Works 2019* (2019), 12, <https://consumerfed.org/wp-content/uploads/2019/02/auto-insurance-regulation-what-works-2019.pdf>.

<sup>54</sup> See, e.g., NAIC, *Product Filing Review Handbook*, 11.

The general business model of insurance allows insurers to differentiate among insureds through the process of risk classification based on certain observable characteristics.<sup>55</sup> Every state, however, has some form of legal prohibition against “unfair discrimination” with respect to insurance.<sup>56</sup> Such laws vary by state but typically prohibit “discrimination among insureds of the same class based upon something other than actuarial risk.”<sup>57</sup> In addition, many state laws expressly bar discrimination based on gender, ethnicity, religion, or other specific characteristics; however, the type and extent of such express prohibitions vary by state.<sup>58</sup> The NAIC Market Regulation Handbook contains standards for the examination of rates, including guidance for the review of relevant underwriting information to ensure that no unfair discrimination occurs.<sup>59</sup>

Despite state prohibitions on unfair discrimination, some studies have found that the use of proxy factors in underwriting has a disproportionate and potentially unfairly discriminatory impact on auto insurance rates for certain groups, and thus may limit economic mobility.<sup>60</sup> State policymakers, including state insurance regulators and the NAIC, are increasingly focused on the use of proxy factors in underwriting.<sup>61</sup> This focus may also be due to the increasing accessibility of new technologies such as AI and machine learning, which enable insurers to collect and process increasing amounts of data on policyholders. See [Section V](#).

### C. State Restrictions on Proxy Factors

State-by-state regulatory review and approval of auto insurance rates and rate-setting methodologies are means by which state insurance regulators seek to ensure that insurers’ use of “rating factors” complies with applicable law.<sup>62</sup> Generally, state anti-discrimination laws prohibit discrimination against people who are members of a state-recognized protected class. Such laws typically prohibit discrimination based on intent rather than effect (or impact) and state laws generally do not treat as unfair discrimination the use of a “facially neutral” factor that

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<sup>55</sup> See [Section IV.A](#).

<sup>56</sup> See, e.g., Nat Shapo, “Principles of State Insurance Unfair Discrimination Law: Thoughts Regarding NAIC and NCOIL Policymaking,” *NAIC* (November 11, 2020), [https://content.naic.org/sites/default/files/call\\_materials/Unfair%20discrimination%20law%2C%20Nov.%2011%2C%202020.pdf](https://content.naic.org/sites/default/files/call_materials/Unfair%20discrimination%20law%2C%20Nov.%2011%2C%202020.pdf); Ronen Avraham, *et al.*, “Understanding Insurance Antidiscrimination Laws,” 87 *S. Cal. L. Rev.* 195 (2014), 201–04, [https://scholarship.law.umn.edu/faculty\\_articles/576](https://scholarship.law.umn.edu/faculty_articles/576).

<sup>57</sup> *Insurance Commissioner for the State of Maryland v. Engelman*, 692 A.2d 474, 480 (Md. Ct. App. 1997).

<sup>58</sup> See Avraham, *et al.*, “Understanding Insurance Antidiscrimination Laws,” 87 *S. Cal. L. Rev.* 195.

<sup>59</sup> *Drivers of Discrimination: An Examination of Unfair Premiums, Practices, and Policies in the Auto Insurance Industry*, Before the Subcommittee on Housing, Community Development and Insurance, House Financial Services Committee, 116th Cong. (March 4, 2020) (statement of Elizabeth Kelleher Dwyer, Rhode Island Department of Business Regulation, Insurance Division, on behalf of the NAIC), 2, <https://www.congress.gov/116/meeting/house/110631/witnesses/HHRG-116-BA04-Wstate-DwyerE-20200304.pdf> (NAIC, *Drivers of Discrimination Testimony*).

<sup>60</sup> Tom Feltner & Douglas Heller, “High Price of Mandatory Auto Insurance in Predominantly African American Communities,” *Consumer Federation of America* (November 2015), [https://consumerfed.org/wp-content/uploads/2015/11/151118\\_insuranceinpredominantlyafricanamericancommunities\\_CFA.pdf](https://consumerfed.org/wp-content/uploads/2015/11/151118_insuranceinpredominantlyafricanamericancommunities_CFA.pdf).

<sup>61</sup> As noted above, in this Report the term “proxy factors” refers to information about customers that insurers might use in setting auto insurance premiums but that may be beyond the customer’s control or may not seem directly related to the hazards associated with, or operation of, an auto.

<sup>62</sup> NAIC, *Drivers of Discrimination Testimony*, 1.

disparately impacts members of a protected class if there is no evidence of an intent to discriminate.<sup>63</sup> This Report discusses below the use of several proxy factors that regulators have reviewed, including credit-based insurance scores, occupation and education levels, homeownership, gender, and marital status.

Insurers use additional proxy factors. For example, age is a factor that drivers cannot control, but is one of the least contested proxy factors because its actuarial correlation to driving experience and ability is well established.<sup>64</sup> Thus, teenage drivers typically pay more for insurance than do older drivers—and insurance industry statistics show teenagers are generally more likely to be involved in accidents in comparison to more experienced, older drivers.<sup>65</sup> Personal auto insurance rates may decline for drivers older than 25, with drivers in their 50s and 60s paying the lowest rates.<sup>66</sup> As drivers age into their mid-60s, though, they present slightly higher risk as a group due to the tendency to develop medical conditions and changes in physical and cognitive fitness that may affect their driving, such as slower reflexes and diminished visual acuity. Fatal accident rates are also significantly higher for those over age 65.<sup>67</sup>

Actuaries and others have stated that the inclusion of more predictive variables (including proxy factors) leads to more accurate pricing, less subsidization of riskier drivers by safer drivers, and more consumer choice.<sup>68</sup> In comments submitted to the U.S. Department of the Treasury (Treasury), the American Academy of Actuaries stated that actuarial assessments may provide justification for the use of factors that strongly correlate with expected claims costs, even if there is no intuitive connection between a particular factor and driving behavior.<sup>69</sup> In particular, under Actuarial Standard of Practice No. 12, correlation is adequate to justify the use of a risk characteristic, and it is “fair” and “equitable” to use such characteristics for classification even if a causal relationship between the risk characteristic and the expected outcome has not been established.<sup>70</sup> A 2022 paper by the Casualty Actuarial Society recommends that actuaries “play a key role as the insurance industry develops approaches to test for, measure and address potential racial bias, and ensure fairness in insurance while still maintaining risk-based pricing, company competitiveness and solvency.”<sup>71</sup> Some actuaries have recently tried to identify and

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<sup>63</sup> Shapo, “Principles of State Insurance Unfair Discrimination Law,” 12.

<sup>64</sup> See, e.g., Comment of Insurance Services Office, Inc. (ISO), 3 (July 26, 2021), <https://www.regulations.gov/comment/TREAS-DO-2021-0010-0011> (ISO Comment).

<sup>65</sup> See, e.g., “Fatality Facts 2022: Teenagers,” Insurance Institute for Highway Safety (IIHS) Highway Loss Data Institute (HLDI), last updated June 2024, <https://www.iihs.org/topics/fatality-statistics/detail/teenagers>.

<sup>66</sup> See, e.g., Shannon Martin, “Auto insurance rates by age in 2025” *Bankrate.com*, last updated January 9, 2025, <https://www.bankrate.com/insurance/car/auto-insurance-rates-by-age/>.

<sup>67</sup> See, e.g., NHTSA, *Traffic Safety Facts: Older Population 2019 Data* (2021), <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813121>.

<sup>68</sup> See, e.g., Comment of Insurance Information Institute (July 26, 2021), 2, <https://www.regulations.gov/comment/TREAS-DO-2021-0010-0012> (III Comment).

<sup>69</sup> See, e.g., American Academy of Actuaries Comment, 4.

<sup>70</sup> Actuarial Standards Board, *Actuarial Standard of Practice No. 12: Risk Classification (for All Practice Areas) (Revised Edition)* (2005), 3, [http://www.actuarialstandardsboard.org/wp-content/uploads/2014/07/asop012\\_101.pdf](http://www.actuarialstandardsboard.org/wp-content/uploads/2014/07/asop012_101.pdf).

<sup>71</sup> Casualty Actuarial Society, *Approaches to Address Racial Bias in Financial Services: Lessons for the Insurance Industry* (2022), 18, [https://www.casact.org/sites/default/files/2022-03/Research-Paper\\_Approaches-to-Address-Racial-Bias\\_0.pdf](https://www.casact.org/sites/default/files/2022-03/Research-Paper_Approaches-to-Address-Racial-Bias_0.pdf).

mitigate unfair discrimination and unintended bias in rating.<sup>72</sup> An industry representative told Treasury that insurers are continually updating which factors they use.<sup>73</sup>

As reflected in comments to Treasury, consumer and minority rights groups have found that the use of proxy factors can lead to perverse outcomes in pricing, perpetuate the economic impact of racism, and undermine broader public policy goals of encouraging universal coverage and prohibiting unfair discrimination.<sup>74</sup>

According to the NAIC, state insurance regulators have the ability to recognize when proxy factors, even if actuarially predictive, “may be inconsistent with other public policies” and state law “specifically provides regulators the authority to ensure that rates are not ‘excessive, inadequate, or unfairly discriminatory.’”<sup>75</sup> Further, the NAIC has pointed out that state regulators may permit or prohibit rating factors as appropriate for their jurisdictions and that some states do prohibit certain types of proxy factors.<sup>76</sup> For example, the Colorado Division of Insurance is studying personal auto insurer pricing algorithms to ensure that they do not unfairly discriminate against protected classes.<sup>77</sup> Oregon has considered an alternate approach: expressly enumerating permitted underwriting factors (such as an applicant’s history of safe driving, number of miles driven, and driving experience) rather than prohibiting factors.<sup>78</sup> The Oregon Department of Consumer and Business Services states that this approach would eliminate the ability of insurers to use other, non-prohibited proxy factors that could replicate the disparate impact of the prohibited proxy factors.<sup>79</sup>

In state policy discussions, those opposing the use of proxy factors generally favor limiting the basis of underwriting decisions to factors that are more clearly and intuitively related to the risk of accidents, such as driver safety record, miles driven per year, and driving experience.<sup>80</sup> However, the risk of getting into an accident is only one of the factors that may predict whether a

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<sup>72</sup> See, e.g., American Academy of Actuaries, *Issue Brief: Approaches to Identify and/or Mitigate Bias in Property and Casualty Insurance* (2023), [https://www.actuary.org/sites/default/files/2023-02/CPCdataBiasIB.2.23\\_0.pdf](https://www.actuary.org/sites/default/files/2023-02/CPCdataBiasIB.2.23_0.pdf).

<sup>73</sup> III Comment, 12.

<sup>74</sup> See, e.g., Comment of Consumer Reports (July 26, 2021), 3, 6, <https://www.regulations.gov/comment/TREAS-DO-2021-0010-0015> (Consumer Reports Comment); Comment of Consumer Federation of America, *et al.* (July 26, 2021), 4–5, 6–7, <https://www.regulations.gov/comment/TREAS-DO-2021-0010-0009>.

<sup>75</sup> NAIC, *Drivers of Discrimination Testimony*, 2. Others have made similar observations. See American Academy of Actuaries Comment.

<sup>76</sup> NAIC, *Drivers of Discrimination Testimony*, 2.

<sup>77</sup> Colorado Department of Regulatory Agencies, Division of Insurance, “SB21-169 – Protecting Consumers from Unfair Discrimination in Insurance Practices,” <https://doi.colorado.gov/for-consumers/sb21-169-protecting-consumers-from-unfair-discrimination-in-insurance-practices> (Protecting Consumers).

<sup>78</sup> See, e.g., Oregon H.B. 2043 (2021 Regular Session), <https://olis.oregonlegislature.gov/liz/2021R1/Measures/Overview/HB2043>.

<sup>79</sup> See, e.g., Comment of Oregon Department of Consumer and Business Services (DCBS) (July 26, 2021), 2, <https://www.regulations.gov/comment/TREAS-DO-2021-0010-0014> (Oregon DCBS Comment).

<sup>80</sup> See, e.g., Consumer Reports Comment, 2; Comment of Maryland Consumer Right Coalition (MCRC) (July 26, 2021), 6, <https://www.regulations.gov/comment/TREAS-DO-2021-0010-0020> (MCRC Comment).

policyholder will file a claim, and some policyholders may decide not to file a claim.<sup>81</sup> Wealthy auto owners, for example, may be more likely to pay for auto repairs themselves after an accident, without the use of insurance.<sup>82</sup> In the ratemaking process, actuaries seek to determine both the risk and severity of a loss and the likelihood that a claim will be filed by an individual. Accordingly, industry representatives state that proxy factors may be actuarially tested measures of the likelihood of a claim.<sup>83</sup>

Many state regulators have reviewed and continue to review insurers' uses of several proxy factors that may correspond with the wealth of insureds, such as credit-based insurance scores, occupation and education levels, homeownership, gender, and marital status.<sup>84</sup> These proxy factors are further addressed below.

**Credit-Based Insurance Scores.** A credit-based insurance score is a proxy factor used by some insurers. Although differing in various respects, credit-based insurance scoring is similar to the credit scoring used by creditors with which many consumers are familiar.<sup>85</sup> Insurers that use this proxy factor in underwriting or rating auto insurance may do so on the basis that it is predictive of the likelihood that a policyholder will file an insurance claim.<sup>86</sup> Those in favor of using credit-based insurance scores have found that the relationship has actuarial support and that credit history data are “exposure/policy characteristics” that should be allowed as predictive of auto claim expense.<sup>87</sup> There is growing concern by some groups, however, that this proxy factor unfairly discriminates against some consumers.<sup>88</sup>

One rationale for the use of credit-based insurance scores is that higher scores are associated with greater net worth and higher income, and that wealthy or higher-income individuals are likely to be able to afford to cover more of the costs of an accident from their own resources and

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<sup>81</sup> Itzhak Venezia, “Aspects of Optimal Automobile Insurance,” *The Journal of Risk and Insurance*, Vol. 51, No.1 (March 1984), 63, <https://doi.org/10.2307/252801>.

<sup>82</sup> See generally Kelli Grant, “The Real Cost of an Auto Insurance Claim,” *CNBC* (January 27, 2015), <https://www.cnn.com/2015/01/26/filing-an-auto-insurance-claim-could-hurt-your-rate.html>.

<sup>83</sup> See, e.g., Comment of American Property Casualty Insurance Association (APCIA) (July 26, 2021), <https://www.regulations.gov/comment/TREAS-DO-2021-0010-0006> (APCIA Comment); APCIA, “APCIA Comments on FIO’s RFI Auto Insurance Affordability,” news release, July 28, 2021, <https://www.apci.org/media/news-releases/release/67796/>.

<sup>84</sup> Commenters noted that states’ policy and legislative discussions around proxy factors typically can be grouped into two broad categories: socioeconomic factors, which may function in practice as proxies for wealth and race/ethnicity; and immutable characteristics, which are factors wholly outside of the drivers’ control. See, e.g., Consumer Reports Comment, 2; MCRC Comment, 6.

<sup>85</sup> Compare “What is a FICO Score?,” Equifax, <https://www.equifax.com/personal/education/credit/score/articles/-/learn/what-is-a-fico-score/> with “How an Insurance Company Can Use Your Credit Score to Determine Your Premium,” D.C. Department of Insurance, Securities, and Banking, <https://disb.dc.gov/page/how-insurance-company-can-use-your-credit-score-determine-your-premium>.

<sup>86</sup> See, e.g., John Ulzheimer, “What Is the Difference Between Credit-Based Insurance Scores and Credit Scores?” *Experian*, November 21, 2023, <https://www.experian.com/blogs/ask-experian/what-is-the-difference-between-credit-based-insurance-scores-and-credit-scores>; “Credit-Based Insurance Scores,” NAIC, last updated January 31, 2024, <https://content.naic.org/cipr-topics/credit-based-insurance-scores>.

<sup>87</sup> See, e.g., ISO Comment, 4.

<sup>88</sup> See, e.g., MCRC Comment, 3.



thus may be less likely to file claims as compared to those with low or moderate incomes. However, one study found that credit-based insurance scores are weakly correlated with income.<sup>89</sup>

Lower credit-based insurance scores will tend to cause a policyholder to be charged relatively higher premiums for comparable coverage.<sup>90</sup> In a recent study, the Consumer Federation of America concluded that, for FR Limits policies, average annual auto insurance premiums for persons with poor credit were more than double the premiums for those with excellent credit.<sup>91</sup> Others in the auto insurance sector have argued that credit scoring is a “neutral factor”—meaning it does not bear any effect on the outcome—in calculating premiums.<sup>92</sup>

Consumer advocates and others also stress that “credit scores are highly correlated with race and income” and that they “reflect longstanding disparities in housing wealth, and employment and educational opportunity.”<sup>93</sup> According to critics of credit-based insurance scores, there are “serious problems with the accuracy of information contained in credit files that underlie insurance scores derived from credit information.”<sup>94</sup> Moreover, critics contend that even accurate credit histories may be adversely affected by circumstances outside of policyholders’ control.<sup>95</sup> Policyholders generally do not have access to their credit-based insurance scores, while they are legally entitled to a free copy of their traditional consumer credit report.<sup>96</sup>

Some state legislatures have prohibited or limited the use of credit-based insurance scores.<sup>97</sup> Proponents of such limits have noted that insurance markets in these states (e.g., California and Hawaii) “have not suffered as a result” of banning credit score use.<sup>98</sup> An intermediate approach,

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<sup>89</sup> See Darcy Steeg Morris, *et al.*, *Do Credit-Based Insurance Scores Proxy for Income in Predicting Auto Claim Risk?* 14 J. Empirical Legal Stud. No. 2 (2017), 13, <https://ssrn.com/abstract=2685304> (concluding that insurance score does not act as proxy for income in a standard actuarial model of auto claim risk).

<sup>90</sup> See Federal Trade Commission, *Credit-Based Insurance Scores: Impacts on Consumers of Automobile Insurance* (2007), 3, [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](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).

<sup>91</sup> Douglas Heller & Michael DeLong, “The One Hundred Percent Penalty: How Auto Insurers’ Use of Credit Information Increases Premiums for Safe Drivers and Perpetuates Racial Inequality,” *Consumer Federation of America*, July 31, 2023, 8, [https://consumerfed.org/wp-content/uploads/2023/07/Official-CFA-Credit-Score\\_2023-FINAL-REPORT.pdf](https://consumerfed.org/wp-content/uploads/2023/07/Official-CFA-Credit-Score_2023-FINAL-REPORT.pdf).

<sup>92</sup> See, e.g., “Background on: Insurance Scoring,” III, last updated October 18, 2023, <https://www.iii.org/article/background-on-insurance-scoring>.

<sup>93</sup> Consumer Reports Comment, 3. See also Oregon DCBS Comment, 2.

<sup>94</sup> Consumer Reports Comment, 8–9.

<sup>95</sup> Oregon DCBS Comment, 4.

<sup>96</sup> See Ulzheimer, “Difference Between Scores,” CFPB, “How Do I Get a Free Copy of My Credit Reports?,” last updated August 28, 2023, <https://www.consumerfinance.gov/ask-cfpb/how-do-i-get-a-free-copy-of-my-credit-reports-en-5/>.

<sup>97</sup> NAIC, *Drivers of Discrimination Testimony*, 2.

<sup>98</sup> *Drivers of Discrimination: An Examination of Unfair Premiums, Practices, and Policies in the Auto Insurance Industry*, Before the Subcommittee on Housing, Community Development and Insurance, House Financial Services Committee, 116th Cong. (March 4, 2020) (testimony of Douglas Heller, Insurance Expert, Consumer Federation of

adopted by Nevada, allows insurers to use credit-based insurance scores as an underwriting or rating factor but requires them to disclose to policyholders that they are doing so.<sup>99</sup>

**Occupation and Education Levels.** Absent state prohibitions, drivers with higher levels of educational attainment and occupation often pay less for auto insurance than those with lower levels.<sup>100</sup> Some state regulators and legislatures have limited or prohibited the use of occupation or education levels as underwriting or rating factors. For example, the New York State Department of Financial Services (NYDFS) instituted limits on consideration of a driver’s work status or educational level after finding that there was no correlation between driving ability and income, occupation, or education level.<sup>101</sup> The Florida Office of Insurance Regulation also previously studied the use of these factors and found that using a combination of occupation and education factors “may magnify the ‘inequality effect.’”<sup>102</sup>

Other states have evaluated factors that are closely linked to occupation, such as affinity groups (e.g., members of the same professional organization). Affinity group discounts may correlate to factors such as education and income and may therefore come under scrutiny for similar reasons.<sup>103</sup> For example, a California Department of Insurance analysis found that insureds in affinity groups were more likely to reside in ZIP Codes populated by those with higher educational attainment.<sup>104</sup>

States that have not restricted the use of education and occupation as rating factors point to correlation with loss experience, stating that there is actuarial justification on the basis that drivers with more education take fewer risks and, as policyholders, they produce lower losses compared to those with fewer educational credentials.<sup>105</sup> Some groups, however, have

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America), 7, <https://democrats-financialservices.house.gov/uploadedfiles/hhrg-116-ba04-wstate-hellerd-20200304.pdf>.

<sup>99</sup> See Nev. Rev. Stat. 686A.700; Nevada Division of Insurance, *List of Nevada Private Passenger Auto Insurance Companies by Usage Status of Credit-Based Insurance Scoring* (2021), [https://doi.nv.gov/uploadedFiles/doinvgov/public-documents/Consumers/NV\\_PPA\\_AB120\\_List.pdf](https://doi.nv.gov/uploadedFiles/doinvgov/public-documents/Consumers/NV_PPA_AB120_List.pdf); “Credit Scoring FAQs,” Nevada Division of Insurance, <https://doi.nv.gov/Consumers/Credit-Scoring-FAQs/>.

<sup>100</sup> See, e.g., Western New York Law Center, *Major Auto Insurers Charge Higher Rates to High School Graduates and Low Income Workers* (2015), 1, <http://wnylc.com/wp-content/uploads/2015/09/July-2015-Western-New-York-Law-Center-Auto-Insurance-Report.pdf>.

<sup>101</sup> See New York State Department of Financial Services, “Governor Cuomo Announces Action to Protect New Yorkers from Unfairly Discriminatory Auto Insurance Rates,” news release, May 16, 2017, [https://www.dfs.ny.gov/reports\\_and\\_publications/press\\_releases/pr1705161](https://www.dfs.ny.gov/reports_and_publications/press_releases/pr1705161).

<sup>102</sup> Commissioner Kevin M. McCarty, Florida Office of Insurance Regulation, *The Use of Occupation and Education as Underwriting/Rating Factors for Private Passenger Automobile Insurance* (2007), 13, [https://www.floir.com/docs-sf/default-source/property-and-casualty/other-property-casualty-reports/occraterpt.pdf?sfvrsn=65c3b3f1\\_4](https://www.floir.com/docs-sf/default-source/property-and-casualty/other-property-casualty-reports/occraterpt.pdf?sfvrsn=65c3b3f1_4).

<sup>103</sup> See, e.g., APCI, “Now Is Not the Time to Limit Insurance Discounts for California Drivers,” news release, February 23, 2021, <https://www.apci.org/media/news-releases/release/65347/>.

<sup>104</sup> California Department of Insurance, *Investigatory Hearing on the Use of Group Rating in Private Passenger Automobile Insurance* (2019), 18–20, [https://www.insurance.ca.gov/0400-news/0200-studies-reports/upload/CDI-Affinity-Group-Hearing-Powerpoint-9\\_17\\_19\\_Public.pdf](https://www.insurance.ca.gov/0400-news/0200-studies-reports/upload/CDI-Affinity-Group-Hearing-Powerpoint-9_17_19_Public.pdf).

<sup>105</sup> See, e.g., New Jersey Department of Banking and Insurance, *The Use of Occupation and Education Factors in Automobile Insurance* (2008), 22, [https://www.state.nj.us/dobi/division\\_insurance/pdfs/ed\\_occ\\_april2008.pdf](https://www.state.nj.us/dobi/division_insurance/pdfs/ed_occ_april2008.pdf).

questioned the asserted actuarial correlation, noting that “the inconsistent usage of these [education and occupation] factors casts doubt on their predictive ability.”<sup>106</sup>

**Homeownership.** Some state regulators and legislatures, such as Massachusetts, have prohibited auto insurers from using homeownership as a rating factor on public policy grounds, despite purported or apparent actuarial justifications for its use. As with credit-based insurance scores, homeownership may correlate to income and thus to a lower risk of filing a claim.<sup>107</sup> Studies by consumer advocates state that most major auto insurers “penalize renters despite perfect driving records,” charging “good drivers as much as 47 percent more for basic liability insurance if they don’t own their home.”<sup>108</sup> Regulators have stated that because minority and low-income drivers are less likely to be homeowners, this practice tends to negatively affect minority and LMI drivers.<sup>109</sup>

**Gender.** Use of gender as a proxy factor has a long history in the underwriting of personal auto insurance, with men historically paying more for auto insurance than do women (all else being equal).<sup>110</sup> Insurance industry data show, for example, that among all age groups in 2019, the driving-related fatality rate for males was significantly higher than for females. Statistics on vehicle crash fatalities resulting from risky behaviors (such as not wearing a seatbelt, speeding, and driving while impaired) also show that males have a higher incidence of fatalities.<sup>111</sup>

Most states allow the use of gender to some degree in setting rates, but some state regulators and legislatures have prohibited or limited use of gender in auto insurance rate setting.<sup>112</sup> Several states have mandated that auto insurance rating be gender-neutral or gender-blind.<sup>113</sup> In such discussions, stakeholders question the actuarial soundness of gender as a rating factor.<sup>114</sup>

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<sup>106</sup> MCRC Comment, 4.

<sup>107</sup> Adam Bonislawski, “Homeowners File Fewer Auto Claims,” *The Wall Street Journal*, December 31, 2014, <https://www.wsj.com/articles/homeowners-file-fewer-auto-claims-1420038394>.

<sup>108</sup> Consumer Federation of America, “Good Drivers Pay More for Basic Auto Insurance If They Rent Rather than Own Their Home,” news release, February 8, 2016, [https://consumerfed.org/press\\_release/good-drivers-pay-more-for-basic-auto-insurance-if-they-rent-rather-than-own-their-home/](https://consumerfed.org/press_release/good-drivers-pay-more-for-basic-auto-insurance-if-they-rent-rather-than-own-their-home/).

<sup>109</sup> Comment of the Commonwealth of Massachusetts Office of the Attorney General, 4 (July 22, 2021), <https://www.regulations.gov/comment/TREAS-DO-2021-0010-0003>.

<sup>110</sup> See, e.g., ISO Comment, 3; Susan Manning, “How Does Gender Affect Auto Insurance Rates?,” *Insurance.com*, May 31, 2024, <https://www.insurance.com/auto-insurance/safety/are-men-better-drivers-than-women.aspx>; “Fatality Facts 2022: Males and Females,” IIHS HLDI, last updated June 2024, <https://www.iihs.org/topics/fatality-statistics/detail/males-and-females>.

<sup>111</sup> “Fatality Facts 2020: Males and Females,” IIHS HLDI.

<sup>112</sup> In addition, Oregon has issued guidance that auto insurance “[r]ating plans, rating systems and applications that do not allow applicants who designate their sex or gender as not-specified to obtain coverage from an insurer will be considered unfairly discriminatory on the basis of sex.” Oregon Division of Financial Regulation Bulletin DFR 2018-3 (April 16, 2018), <https://dfr.oregon.gov/laws-rules/Documents/Bulletins/bulletin2018-03.pdf>.

<sup>113</sup> Jonah von der Embse, “Beyond the Binary – How Insurance Companies Can Adapt to Meet the Needs of Transgender, Non-Binary, and Intersex Individuals,” *SOA Research Institute* (2022), <https://www.soa.org/4aa620/globalassets/assets/files/resources/research-report/2022/age-ret-lgbtq--vonderembse.pdf>.

<sup>114</sup> See von der Embse, “Beyond the Binary,” 6; MCRC Comment, 5.

**Marital Status.** Marital status is not an immutable characteristic, but neither is it one that is quickly or easily changed. Many states currently allow the use of marital status as a proxy factor. Marital status, age, and gender are rating factors described by one insurance industry organization as “traditionally utilized, proved, and long accepted.”<sup>115</sup> Insurers have explained the use of marital status on the grounds that married drivers are more careful and responsible.<sup>116</sup> Consumer group studies have shown that single, separated, or divorced drivers pay more for auto insurance than do married drivers and that the continued use of marital status as a rating factor raises questions about fairness and proxy discrimination.<sup>117</sup> Consumer groups also cite marital status as a proxy factor which tends to discriminate against low- and moderate-income persons.<sup>118</sup>

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<sup>115</sup> ISO Comment, 3.

<sup>116</sup> Laura Adams, “How Age, Gender, and Marital Status Affect Your Car Insurance,” *Huffington Post*, December 6, 2017, [https://www.huffpost.com/entry/how-age-gender-and-marital-status-affect-your-car-insurance\\_b\\_6973360](https://www.huffpost.com/entry/how-age-gender-and-marital-status-affect-your-car-insurance_b_6973360).

<sup>117</sup> See, e.g., Consumer Federation of America, “New Research Shows That Most Major Auto Insurers Vary Prices Considerably Depending on Marital Status,” news release, July 27, 2015, [https://consumerfed.org/press\\_release/new-research-shows-that-most-major-auto-insurers-vary-prices-considerably-depending-on-marital-status/](https://consumerfed.org/press_release/new-research-shows-that-most-major-auto-insurers-vary-prices-considerably-depending-on-marital-status/).

<sup>118</sup> See, e.g., Consumer Federation of America, “New Research Shows That Most Major Auto Insurers Vary Prices.”

## V. THE USE OF TECHNOLOGY, INCLUDING ARTIFICIAL INTELLIGENCE, IN PERSONAL AUTO INSURANCE

Technology, including the increased use of AI, is shaping the future of personal auto insurance. Although most insurers are still in the early phases of defining their governance models and controls environments for AI, auto insurers report significant interest in AI and machine learning.<sup>119</sup> For example, the NAIC found that 88 percent of its surveyed auto insurers use, plan to use, or plan to explore using AI and machine learning in some part of their business operations.<sup>120</sup> Underwriting, pricing, claims handling, and even liability determinations, are all insurance company functions that technological changes may affect. While technology has the potential to substantially benefit both consumers and insurers, it is not without potential risks. Regulators at both the state and federal levels are prioritizing work to both understand and mitigate these risks. The emerging technologies, their use cases, potential benefits and risks, and regulatory responses are considered in the following subsections.

### A. Telematics, Usage-Based Insurance, and Autonomous Vehicles

Telematics, including usage-based insurance (UBI), is a technology that allows insurers to directly monitor actual driving behaviors. Autonomous vehicles are vehicles that operate with little or no human intervention. Both of these technologies have the potential to significantly affect personal auto insurance pricing.<sup>121</sup>

Telematics and UBI are related personal auto insurance technologies that have gained in popularity among both insurers and consumers. Through their use, insurers seek to tie premiums, at least partially, to driving behavior.<sup>122</sup> Telematics can provide data on, for example, speeding, hard acceleration, hard stops, and cellular phone use. UBI, a type of telematics, focuses on tracking actual miles driven. UBI is typically priced with a lower base rate (versus fixed-cost policies) plus a per-mile rate.<sup>123</sup> According to insurers, the real-time monitoring of a driver's behavior through telematics allows them to align premiums more closely with actual,

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<sup>119</sup> Stuart Doyle, *et al.*, “How Insurers Can Build the Right Approach for Generative AI,” *EY*, October 11, 2023, [https://www.ey.com/en\\_us/insurance/how-insurers-can-build-the-right-approach-for-generative-ai-in-insurance](https://www.ey.com/en_us/insurance/how-insurers-can-build-the-right-approach-for-generative-ai-in-insurance).

<sup>120</sup> NAIC, *Private Passenger Auto Artificial Intelligence/Machine Learning Survey Results* (2022), <https://content.naic.org/sites/default/files/inline-files/PP%20Auto%20Survey%20Team%20Report%20120822.pdf>.

<sup>121</sup> See generally Dimitris Karapiperis, *et al.*, “Usage Based Insurance and Vehicle Telematics: Insurance Market and Regulatory Implications,” *NAIC & Center for Insurance Policy Research*, March 2015, [https://content.naic.org/sites/default/files/naic\\_archive/cipr\\_study\\_150324\\_usage\\_based\\_insurance\\_and\\_vehicle\\_telomatics\\_study\\_series.pdf](https://content.naic.org/sites/default/files/naic_archive/cipr_study_150324_usage_based_insurance_and_vehicle_telomatics_study_series.pdf). See also, J.D. Power, “Auto Insurance Customer Satisfaction Plummets as Rates Continue to Surge, J.D. Power Finds,” news release, June 13, 2023, <https://www.jdpower.com/business/press-releases/2023-us-auto-insurance-study>.

<sup>122</sup> See, e.g., Andrea Wells, “UBI-Use Rises as Customer Satisfaction Declines,” *Insurance Journal*, July 3, 2023, <https://www.insurancejournal.com/magazines/mag-editorsnote/2023/07/03/727961.htm>.

<sup>123</sup> FIO, *Annual Report on the Insurance Industry* (2020), 26, <https://home.treasury.gov/system/files/311/2020-FIO-Annual-Report.pdf> (citations omitted).

relevant driving behaviors (as compared to traditional underwriting) because insurers are able to more accurately estimate the risk of an accident using real-time data.<sup>124</sup>

The type and detail of data potentially employed by an insurer depends on the technology being used, the agreement of the policyholder to share data, and state law.<sup>125</sup> Some stakeholders advocate for greater consistency and transparency in state regulation of telematics, UBI, and other technologies and for increased focus on establishing use cases, including through consumer outreach by both the industry and regulators.<sup>126</sup> Some have argued that telematics data should replace proxy factors in underwriting because the data provide a more accurate and direct reflection of an individual drivers' level of risk.<sup>127</sup>

However, the usage rate for telematics generally, and UBI in particular, remains relatively low and the technology and its related products are still evolving.<sup>128</sup> Many telematics and UBI programs require access to a driver's smartphone, which may adversely affect those who are less likely to own such devices, such as the elderly or the poor.<sup>129</sup> Telematics and UBI also may raise privacy concerns that could hinder their adoption because they can collect location data, even when the user is not driving, which means that in some cases the app is always tracking a user's location.<sup>130</sup> A recent news report stated that an auto manufacturer collected and shared driving data with a third-party who in turn shared it with insurers, potentially without full and clear disclosure to auto owners.<sup>131</sup>

Autonomous vehicles are vehicles that operate with little or no human intervention and have the potential to reduce the frequency of auto accidents.<sup>132</sup> They are a small but growing part of the

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<sup>124</sup> Lori Chordas, "Resilience President: Telematics, Artificial Intelligence Bring Innovation to Insurance," *A.M. Best*, December 30, 2021, <https://news.ambest.com/newscontent.aspx?refnum=238934&altsrc=174/>.

<sup>125</sup> See, e.g., Ptolemus Consulting Group, *UBI Global Study 4th Edition: Connected Auto Insurance* (2021), <https://www.ptolemus.com/research/connected-auto-insurance-global-study/>.

<sup>126</sup> See, e.g., Comment of Center for Economic Justice, *et al.* (July 26, 2021), 9, <https://www.regulations.gov/comment/TREAS-DO-2021-0010-0009>.

<sup>127</sup> See, e.g., "Should Non-Driving Factors Be Used to Set Auto Rates?," *Insurance Business*, January 30, 2020, <https://www.insurancebusinessmag.com/us/news/breaking-news/should-nondriving-factors-be-used-to-set-auto-rates-211775.aspx>. For more on proxy factors, see [Section IV.C](#). For an insurance industry perspective on telematics' potential benefits, see, e.g., APCIA Comment, 4.

<sup>128</sup> See, e.g., Kaveh Waddell, "What You're Giving Up When You Let Your Car Insurer Track You in Exchange for Discounts," *Consumer Reports*, October 7, 2021, <https://www.consumerreports.org/car-insurance/how-car-insurance-telematics-discounts-really-work-a1549580662/>. As of 2021, sixteen percent of U.S. car insurance customers had signed up for a telematics program and 34 percent were willing to try a telematics program. See J.D. Power, "Auto Insurance Customer Satisfaction Stalls Despite \$18 Billion in Premium Relief, J.D. Power Finds," news release, June 15, 2021, <https://www.jdpower.com/business/press-releases/2021-us-auto-insurance-study>.

<sup>129</sup> See, e.g., "Mobile Fact Sheet," Pew Research Center, <https://www.pewresearch.org/internet/fact-sheet/mobile/>.

<sup>130</sup> Waddell, "What You're Giving Up."

<sup>131</sup> See, e.g., Kashmir Hill, "Automakers Are Sharing Consumers' Driving Behavior With Insurance Companies," *The New York Times*, March 13, 2024, <https://www.nytimes.com/2024/03/11/technology/carmakers-driver-tracking-insurance.html>.

<sup>132</sup> See "Automated Vehicles for Safety," NHTSA, <https://www.nhtsa.gov/vehicle-safety/automated-vehicles-safety#topic-benefits>.

auto market.<sup>133</sup> Some observers note that widespread adoption of autonomous vehicle technology may result in shifting liability for auto accidents from drivers to automakers or to the developers of the autonomous technology software. Such a change would likely be accompanied by a shift in liability insurance coverages away from drivers and towards manufacturers and software developers.<sup>134</sup> Insurers have cited higher replacement costs for new technology as a significant factor of increased auto loss severity, a trend that may expand if autonomous vehicle technology is more widely adopted.<sup>135</sup>

## B. Artificial Intelligence

Artificial intelligence has the potential to increase the efficiency and lower the cost of nearly every aspect of the insurance business, including claims handling, underwriting, customer service, marketing, fraud detection, and rating.<sup>136</sup> Such benefits from AI could reduce insurance protection gaps by improving the availability and cost of insurance, including auto insurance. However, because there is currently limited transparency with consumers regarding the data fed into predictive models, commenters on FIO’s May 2021 RFI noted that “[c]onsumers have no way to determine whether the data used is correct or is instead improperly used as a proxy for race and economic status.”<sup>137</sup> The same is true of regulators. If an AI model is trained on biased data, it is more likely to perpetuate biases in its decision-making process and outcomes.<sup>138</sup> In response to such concerns, some actuaries and academics are developing methodologies to avoid discrimination, such as in predictive modeling for pricing premiums.<sup>139</sup>

As discussed in [Section V.A.](#), the use of AI in insurance also raises privacy issues around the collection of large amounts of consumer information. AI can facilitate the collection of such

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<sup>133</sup> See, e.g., Johannes Deichmann, *et al.*, “Autonomous Driving’s Future: Convenient and Connected,” *McKinsey & Company, Inc.*, January 6, 2023 <https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/autonomous-drivings-future-convenient-and-connected>, (estimating \$300 billion to \$400 billion in revenue by 2035). See also, “Autonomous Vehicles Are Coming, But Slowly,” *The Economist*, April 14, 2023, <https://www.economist.com/special-report/2023/04/14/hands-off-the-wheel>.

<sup>134</sup> See, e.g., Corey Bourbonais, *et al.*, “Connected Revolution: The Future of U.S. Auto Insurance,” *McKinsey & Company, Inc.*, October 27, 2023, <https://www.mckinsey.com/industries/financial-services/our-insights/connected-revolution-the-future-of-us-auto-insurance>.

<sup>135</sup> See, e.g., Bourbonais, *et al.*, “Connected Revolution.”

<sup>136</sup> AI is an interdisciplinary field, usually regarded as a branch of computer science, dealing with models and systems for the performance of functions generally associated with human intelligence, such as reasoning and learning. “The Language of Trustworthy AI: An In-Depth Glossary of Terms,” March 2023, National Institute of Standards and Technology (NIST), [https://docs.google.com/spreadsheets/d/e/2PACX-IvTRBYglcOtgaMrdF11aFxfEY3EmB31zslYI4q2\\_7ZZ8z\\_1IKm7OHtF0t4xIsckuogNZ3hRZAaDQuv\\_K/pubhtml](https://docs.google.com/spreadsheets/d/e/2PACX-IvTRBYglcOtgaMrdF11aFxfEY3EmB31zslYI4q2_7ZZ8z_1IKm7OHtF0t4xIsckuogNZ3hRZAaDQuv_K/pubhtml).

<sup>137</sup> Comment of District of Columbia Department of Insurance, Securities and Banking (DISB) (July 26, 2021) <https://www.regulations.gov/comment/TREAS-DO-2021-0010-0010>. See also Roosevelt Mosely & Radost Wenman, *Methods for Quantifying Discriminatory Effects on Protected Classes in Insurance* (2022), 23, [https://www.casact.org/sites/default/files/2022-03/Research-Paper\\_Methods-for-Quantifying-Discriminatory-Effects.pdf](https://www.casact.org/sites/default/files/2022-03/Research-Paper_Methods-for-Quantifying-Discriminatory-Effects.pdf).

<sup>138</sup> See, e.g., American Academy of Actuaries, “Discrimination: Considerations for Machine Learning, AI Models, and Underlying Data,” *Additional Considerations in Data Science* (February 2024), <https://www.actuary.org/sites/default/files/2023-08/risk-brief-discrimination.pdf>.

<sup>139</sup> See Mathias Lindholm, *et al.*, *A Multi-Task Network Approach for Calculating Discrimination-Free Insurance Prices* (2022), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=4155585](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4155585).

data, but expansion of AI raises both privacy and cybersecurity concerns for consumers. Insurers and regulators can take important steps to better protect consumer privacy through adherence to consumer notification and consent requirements, data retention and deletion policies, data sharing agreements, and data security protocols.<sup>140</sup> Both regulators and insurers can better assess the accuracy, fairness, and suitability of AI systems by requiring transparency in AI algorithms through data source tracking, audit trails, or other methods.

The federal government is addressing issues raised by the proliferation of AI in nearly all aspects of society. In 2022, the White House released a *Blueprint for an AI Bill of Rights* and, in January 2023, the National Institute of Standards and Technology developed an *Artificial Intelligence Risk Management Framework*.<sup>141</sup> In October 2023, the *Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence* established new standards for AI use to support a regulatory approach to AI to ensure its safety and security; promote responsible innovation, competition, and collaboration; advance equity; protect American workers; protect the interests, privacy, and civil liberties of American consumers, and advance American technological and economic leadership.<sup>142</sup> In June 2024, Treasury issued a request for information on the use of AI with respect to financial services, including insurance.<sup>143</sup> Insurance industry respondents suggested a need for clearer definitions of AI and noted that AI may dramatically change the business practices of insurers.<sup>144</sup> Consumer groups expressed concerns, for example, over unfair discrimination and implicit bias.<sup>145</sup>

State insurance regulators are also studying and responding to the public policy implications of AI, including its use in auto insurance.<sup>146</sup> In 2020, the NAIC adopted its *Principles on Artificial*

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<sup>140</sup> For more on AI and cybersecurity for financial services generally, see Treasury, *Managing Artificial Intelligence-Specific Cybersecurity Risks in the Financial Sector* (March 2024), <https://home.treasury.gov/system/files/136/Managing-Artificial-Intelligence-Specific-Cybersecurity-Risks-In-The-Financial-Services-Sector.pdf>. See also Comment from American Academy of Actuaries, (August 12, 2024), <https://www.regulations.gov/comment/TREAS-DO-2024-0011-0057>

<sup>141</sup> White House Office of Science Technology Policy, “*Blueprint for an AI Bill of Rights: Making Automated Systems Work for the American People*,” October 2022, <https://www.whitehouse.gov/ostp/ai-bill-of-rights/>; NIST, *Artificial Intelligence Risk Management Framework (AI RMF 1.0)* (2023), <https://nvlpubs.nist.gov/nistpubs/ai/NIST.AI.100-1.pdf>.

<sup>142</sup> Exec. Order No. 14,110, 88 Fed. Reg. 75,191 (October 30, 2023), <https://www.whitehouse.gov/briefing-room/presidential-actions/2023/10/30/executive-order-on-the-safe-secure-and-trustworthy-development-and-use-of-artificial-intelligence/>.

<sup>143</sup> Request for Information on Uses, Opportunities, and Risks of Artificial Intelligence in the Financial Services Sector, 89 Fed. Reg. 50,048 (June 12, 2024). See also Treasury, *Artificial Intelligence in Financial Services* (December 2024), <https://home.treasury.gov/system/files/136/Artificial-Intelligence-in-Financial-Services.pdf>.

<sup>144</sup> See Comment from American Property Casualty Insurance Association, (August 12, 2024), <https://www.regulations.gov/comment/TREAS-DO-2024-0011-0041>. See also Comment from National Consumer Law Center, (August 12, 2024), <https://www.regulations.gov/comment/TREAS-DO-2024-0011-0094>.

<sup>145</sup> See Comment from Consumer Federation of America, (August 12, 2024), <https://www.regulations.gov/comment/TREAS-DO-2024-0011-0078>.

<sup>146</sup> See, e.g., FIO, *Annual Report on the Insurance Industry* (2023), 64–65, <https://home.treasury.gov/system/files/311/FIO%20Annual%20Report%202023%2009292023.pdf>; “Initiative to Evaluate Unintentional Bias in Private Passenger Automobile Insurance,” DISB, <https://disb.dc.gov/page/evaluating-unintentional-bias-private-passenger-automobile-insurance>; Colorado Department of Regulatory Agencies, Division



*Intelligence*, which emphasizes the importance of the ethical use of AI.<sup>147</sup> In 2021, the NAIC began surveying insurers to learn how they are using AI and machine learning techniques and what governance and risk management controls insurers have in place.<sup>148</sup> In recognition of the technological advancements and the substantial increase of data collection in the digital era, the NAIC is also assessing how to modernize the current NAIC privacy model laws.<sup>149</sup> More recently, in December 2023, the NAIC adopted a “Model Bulletin on the Use of Artificial Intelligence Systems by Insurers.”<sup>150</sup> Among other things, the bulletin, when adopted by state regulators, sets regulatory expectations as to how insurers will govern the development, acquisition, and use of AI. The NAIC model bulletin’s scope applies to all phases of the AI system life cycle, including design, development, validation, implementation, use, on-going monitoring, updating and retirement. As of December 1, 2024, 19 states have adopted this model bulletin, and an additional four states have adopted specific regulation or guidance.<sup>151</sup>

In July 2024, NYDFS issued final guidance addressing AI use in the insurance sector.<sup>152</sup> The guidance sets expectations for how insurers develop and manage their use of external consumer data, information sources and AI systems to protect consumers from unfair or unlawful discrimination. The NYDFS guidance applies only to the use of AI in the underwriting and pricing of insurance policies and annuity contracts.

FIO is also monitoring the ongoing work of the NAIC’s Innovation, Cybersecurity, and Technology Committee—including that of its Big Data and Artificial Intelligence Working Group, Technology, Innovation, and InsurTech Working Group, and Third-Party Data and Models Task Force—and progress on the 2024 Adopted Charges.<sup>153</sup>

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of Insurance, “Protecting Consumers”; California Department of Insurance, “Insurance Commissioner Ricardo Lara Takes Action to Stop Bias and Discriminatory Use of Consumer Data by Insurance Companies,” news release, June 30, 2022, <https://www.insurance.ca.gov/0400-news/0100-press-releases/2022/release048-2022.cfm>; Connecticut Insurance Department, “Commissioner Mais Reminds Insurers to Avoid Discriminatory Practices with Big Data,” news release, April 20, 2022, [https://portal.ct.gov/cid/searchable-archive/news-releases/press-releases/press-releases-20220420?language=en\\_US](https://portal.ct.gov/cid/searchable-archive/news-releases/press-releases/press-releases-20220420?language=en_US).

<sup>147</sup> NAIC, NAIC Principles on Artificial Intelligence (August 14, 2020), [https://content.naic.org/sites/default/files/inline-files/AI%20principles%20as%20Adopted%20by%20the%20TF\\_0807.pdf](https://content.naic.org/sites/default/files/inline-files/AI%20principles%20as%20Adopted%20by%20the%20TF_0807.pdf).

<sup>148</sup> NAIC, *Private Passenger Auto Artificial Intelligence/Machine Learning Survey Results*.

<sup>149</sup> “Privacy Protections (H) Working Group,” NAIC [https://content.naic.org/cmte\\_h\\_ppwg.htm](https://content.naic.org/cmte_h_ppwg.htm) (see “Exposure Drafts” tab).

<sup>150</sup> NAIC, NAIC Model Bulletin on the Use of Artificial Intelligence Systems by Insurers (December 4, 2023), [https://content.naic.org/sites/default/files/inline-files/2023-12-4%20Model%20Bulletin\\_Adopted\\_0.pdf](https://content.naic.org/sites/default/files/inline-files/2023-12-4%20Model%20Bulletin_Adopted_0.pdf).

<sup>151</sup> See, e.g., NAIC, *Implementation of NAIC Model Bulletin: Use of Artificial Intelligence Systems by Insurers* (2024), <https://content.naic.org/sites/default/files/cmte-h-big-data-artificial-intelligence-wg-ai-model-bulletin.pdf.pdf>.

<sup>152</sup> NYDFS, Insurance Circular Letter No. 7: Use of Artificial Intelligence Systems and External Consumer Data and Information Sources in Insurance Underwriting and Pricing (July 11, 2024), <https://www.dfs.ny.gov/industry-guidance/circular-letters/cl2024-07>.

<sup>153</sup> “Innovation Cybersecurity and Technology (H) Committee” NAIC, <https://content.naic.org/committees/h/innovation-cybersecurity-technology-cmte> (see “2024 Adopted Charges”).

## **VI. CONCLUSION**

FIO will continue to monitor developments in the personal auto insurance sector, including the efforts of state insurance regulators and the NAIC to monitor and analyze the cost and availability of auto insurance for consumers.

**Appendix A: Personal Auto Insurance Requirements by State, 2023**

State	Mandatory Liability Coverage?	FR Limits: BI Minimum Liability Coverage per Person/Accident	PD Minimum Liability Coverage	PIP per Person/Accident	UM/UIM BI Minimum Liability Coverage per Person/Accident/ PD	Notes
AK	Yes	\$50K/\$100K	\$25K	Optional	Optional	
AL	Yes	\$25K/\$50K	\$25K	Optional	Optional	
AR	Yes	\$25K/\$50K	\$25K	Optional	Optional	
AZ	Yes	\$25K/\$50K	\$15K	Optional	Optional	
CA	Yes	\$15K/\$30K	\$5K	Optional	Optional	1
CO	Yes	\$25K/\$50K	\$15K	Optional	Optional	
CT	Yes	\$25K/\$50K	\$25K	Optional	\$25K/\$50K/NA	
DC	Yes	\$25K/\$50K	\$10K	Optional	\$25K/\$50K/\$5K	
DE	Yes	\$25K/\$50K	\$10K	\$15K/\$30K	Optional	
FL	Yes	\$10K/\$20K	\$10K	NA/\$10K	Optional	
GA	Yes	\$25K/\$50K	\$25K	Optional	Optional	
HI	Yes	\$20K/\$40K	\$10K	NA/\$10K	Optional	
IA	Yes	\$20K/\$40K	\$15K	Optional	Optional	
ID	Yes	\$25K/\$50K	\$15K	Optional	Optional	
IL	Yes	\$25K/\$50K	\$20K	Optional	\$25K/\$50K/NA	2
IN	Yes	\$25K/\$50K	\$25K	Optional	Optional	3
KS	Yes	\$25K/\$50K	\$25K	\$4.5K/NA	\$25K/\$50K/NA	
KY	Yes	\$25K/\$50K	\$25K	\$10K/NA	Optional	3
LA	Yes	\$15K/\$30K	\$25K	Optional	Optional	
MA	Yes	\$20K/\$40K	\$5K	NA/\$8K	\$20K/\$40K/NA	
MD	Yes	\$30K/\$60K	\$15K	NA/\$2.5K	\$30K/\$60K/\$15K	
ME	Yes	\$50K/\$100K	\$25K	NA/\$2K	\$50K/\$100K/NA	4
MI	Yes	\$50K/\$100K	\$10K	\$250K	Optional	5
MN	Yes	\$30K/\$60K	\$10K	NA/\$40K	\$25K/\$50K/NA	6
MO	Yes	\$25K/\$50K	\$25K	Optional	\$25K/\$50K/NA	2
MS	Yes	\$25K/\$50K	\$25K	Optional	Optional	
MT	Yes	\$25K/\$50K	\$20K	Optional	\$25K/\$50K/NA	3
NC	Yes	\$30K/\$60K	\$25K	Optional	\$30K/\$60K/\$25K	2
ND	Yes	\$25K/\$50K	\$25K	NA/\$30K	\$25K/\$50K/NA	
NE	Yes	\$25K/\$50K	\$25K	Optional	\$25K/\$50K/NA	
NH	No	\$25K/\$50K	\$25K	Optional	\$25K/\$50K/NA	7
NJ	Yes	\$25K/\$50K	\$25K	NA/\$15K	\$25K/\$50K/\$25K	8
NM	Yes	\$25K/\$50K	\$10K	Optional	Optional	
NV	Yes	\$25K/\$50K	\$20K	Optional	Optional	3
NY	Yes	\$25K/\$50K	\$10K	NA/\$50K	\$25K/\$50K/NA	
OH	Yes	\$25K/\$50K	\$25K	Optional	Optional	
OK	Yes	\$25K/\$50K	\$25K	Optional	Optional	
OR	Yes	\$25K/\$50K	\$20K	\$15K/NA	\$25K/\$50K/NA	2
PA	Yes	\$15K/\$30K	\$5K	NA/\$5K	Optional	3, 4
RI	Yes	\$25K/\$50K	\$25K	Optional	Optional	3
SC	Yes	\$25K/\$50K	\$25K	Optional	\$25K/\$50K/\$25K	2
SD	Yes	\$25K/\$50K	\$25K	Optional	\$25K/\$50K/NA	

State	Mandatory Liability Coverage?	FR Limits: BI Minimum Liability Coverage per Person/Accident	PD Minimum Liability Coverage	PIP per Person/Accident	UM/UIM BI Minimum Liability Coverage per Person/Accident/ PD	Notes
TN	Yes	\$25K/\$50K	\$25K	Optional	Optional	
TX	Yes	\$30K/\$60K	\$25K	Optional	Optional	
UT	Yes	\$25K/\$65K	\$15K	\$3K/NA	Optional	
VA	Yes	\$30K/\$60K	\$20K	Optional	\$30K/\$60K/\$20K	9
VT	Yes	\$25K/\$50K	\$10K	Optional	\$50K/\$100K/\$10K	
WA	Yes	\$25K/\$50K	\$10K	Optional	Optional	
WI	Yes	\$25K/\$50K	\$10K	Optional	\$25K/\$50K/NA	
WV	Yes	\$25K/\$50K	\$25K	Optional	\$25K/\$50K/\$25K	2
WY	Yes	\$25K/\$50K	\$20K	Optional	Optional	

Sources: State Department of Motor Vehicle websites; Bob Haegele, “The Minimum Car Insurance Required in Your State,” *Forbes*, October 4, 2023, <https://www.forbes.com/advisor/car-insurance/minimum-required-in-state/>.

Notes: Legislatures can and do revise liability limits. (1) California BI minimum liability limits increasing to \$30K/\$60K and PD to \$15K, effective January 1, 2025. See California Department of Insurance, Bulletin No. 2023-1 (January 30, 2023), <http://www.insurance.ca.gov/0250-insurers/0300-insurers/0200-bulletins/bulletin-notices-commiss-opinion/upload/bulletin-2023-1-re-sb-1107-final-003.pdf>. (2) UM only; UIM optional. (3) UIM available but policyholder can opt out in writing. (4) Not strictly PIP: medical payments only. (5) PIP amount depends on medical coverage. (6) PIP is \$20K per accident, \$20K for loss of income per accident. (7) BI/PD not required unless you run into certain problems on the road. (8) Minimum coverage for standard policy. (9) Drivers can pay a \$500 fee to forego coverage.

**Appendix B: Premium-to-Income Ratios at FR Limits, Within AP ZIP Codes, by State, 2022**

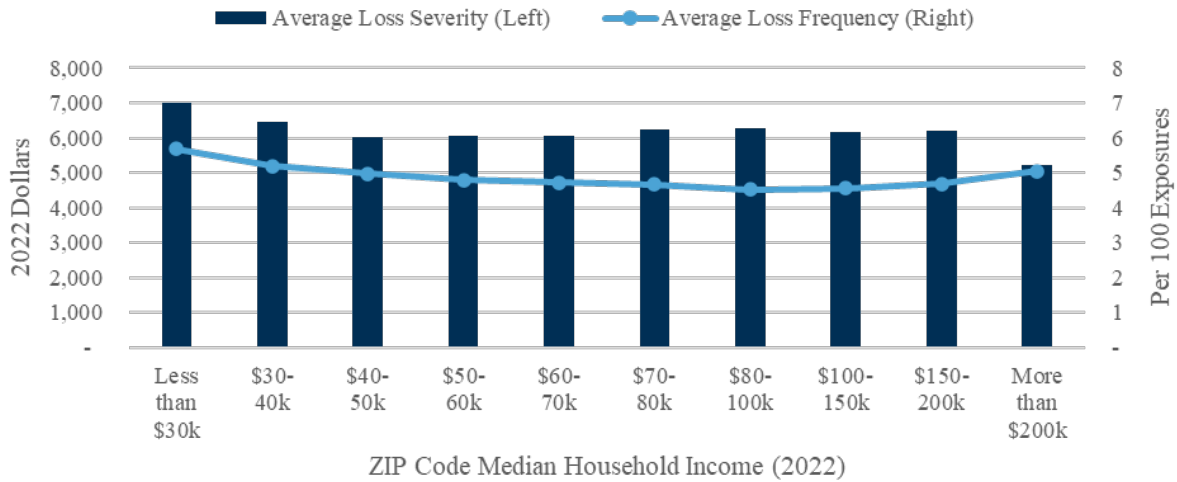
State	Total # All ZIP Codes	<u>AP ZIP Codes Generally</u>				<u>Premium-to-Income Ratio &gt; 1.5%</u>		<u>Premium-to-Income Ratio &gt; 2%</u>		<u>Premium-to-Income Ratio &gt; 3%</u>	
		Total #	% State ZIP Codes	Total Population	% State Pop.	Total Population	% State Pop.	Total Population	% State Pop.	Total Population	% State Pop.
AK	240	173	72.1%	220,938	30.1%	-	0.0%	-	0.0%	-	0.0%
AL	638	211	33.1%	1,458,081	29.0%	349,675	24.0%	87,183	6.0%	-	0.0%
AR	600	155	25.8%	587,909	19.5%	172,875	29.4%	55,777	9.5%	10,214	1.7%
AZ	406	176	43.3%	2,991,788	41.7%	394,101	13.2%	31,686	1.1%	-	0.0%
CA	1,765	979	55.5%	28,793,321	73.2%	258,687	0.9%	35,310	0.1%	102	0.0%
CO	512	146	28.5%	1,555,875	27.0%	1,302	0.1%	-	0.0%	-	0.0%
CT	286	65	22.7%	1,249,782	34.6%	614,547	49.2%	440,580	35.3%	62,714	5.0%
DC	30	16	53.3%	447,385	66.7%	157,246	35.1%	-	0.0%	-	0.0%
DE	66	16	24.2%	295,633	29.7%	199,340	67.4%	82,442	27.9%	16,545	5.6%
FL	992	379	38.2%	10,334,322	47.8%	9,332,103	90.3%	4,192,344	40.6%	1,157,367	11.2%
GA	734	300	40.9%	5,150,317	48.0%	1,976,931	38.4%	560,607	10.9%	72,566	1.4%
HI	94	84	89.4%	1,419,114	97.8%	-	0.0%	-	0.0%	-	0.0%
IA	968	123	12.7%	351,800	11.0%	19,643	5.6%	-	0.0%	-	0.0%
ID	277	53	19.1%	116,364	6.3%	-	0.0%	-	0.0%	-	0.0%
IL	1,387	292	21.1%	4,794,843	37.6%	622,258	13.0%	186,006	3.9%	11,803	0.2%
IN	786	129	16.4%	1,304,226	19.2%	166,383	12.8%	20,018	1.5%	-	0.0%
KS	701	113	16.1%	567,908	19.3%	105,890	18.6%	29,567	5.2%	-	0.0%
KY	764	201	26.3%	754,476	16.8%	292,453	38.8%	133,635	17.7%	-	0.0%
LA	527	196	37.2%	1,724,357	37.2%	2,765,678	160.4%	1,639,929	95.1%	383,367	22.2%
MA	533	92	17.3%	1,972,212	28.2%	-	0.0%	-	0.0%	-	0.0%
MD	466	162	34.8%	3,242,055	52.6%	543,135	16.8%	196,272	6.1%	67,046	2.1%
ME	415	59	14.2%	94,063	6.9%	-	0.0%	-	0.0%	-	0.0%
MI	986	166	16.8%	2,475,804	24.6%	1,345,837	54.4%	933,104	37.7%	485,604	19.6%
MN	876	136	15.5%	859,693	15.1%	92,622	10.8%	-	0.0%	-	0.0%
MO	1,024	197	19.2%	1,186,913	19.3%	525,092	44.2%	218,165	18.4%	8,676	0.7%
MS	418	194	46.4%	1,129,819	38.2%	192,590	17.0%	70,028	6.2%	1,087	0.1%

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State	Total # All ZIP Codes	<u>AP ZIP Codes Generally</u>				<u>Premium-to-Income Ratio &gt; 1.5%</u>		<u>Premium-to-Income Ratio &gt; 2%</u>		<u>Premium-to-Income Ratio &gt; 3%</u>	
		Total #	% State ZIP Codes	Total Population	% State Pop.	Total Population	% State Pop.	Total Population	% State Pop.	Total Population	% State Pop.
MT	368	111	30.2%	139,820	12.8%	-	0.0%	-	0.0%	-	0.0%
NC	834	279	33.5%	3,572,719	34.1%	39,254	1.1%	-	0.0%	-	0.0%
ND	385	73	19.0%	65,298	8.4%	-	0.0%	-	0.0%	-	0.0%
NE	582	99	17.0%	327,677	16.7%	133,004	40.6%	50,765	15.5%	-	0.0%
NH	245	32	13.1%	186,620	13.5%	-	0.0%	-	0.0%	-	0.0%
NJ	590	177	30.0%	4,220,452	45.6%	753,789	17.9%	368,855	8.7%	63,148	1.5%
NM	358	239	66.8%	1,690,160	80.1%	123,138	7.3%	3,402	0.2%	-	0.0%
NV	177	68	38.4%	1,781,812	57.4%	906,171	50.9%	645,131	36.2%	144,644	8.1%
NY	1,776	414	23.3%	9,228,843	46.2%	6,745,644	73.1%	4,974,803	53.9%	1,842,220	20.0%
OH	1,218	265	21.8%	2,708,512	23.0%	654,128	24.2%	254,723	9.4%	70,216	2.6%
OK	661	165	25.0%	966,479	24.3%	144,296	14.9%	5,928	0.6%	-	0.0%
OR	423	78	18.4%	567,283	13.4%	41,343	7.3%	1,457	0.3%	-	0.0%
PA	1,814	357	19.7%	2,728,971	21.0%	995,271	36.5%	341,471	12.5%	-	0.0%
RI	81	11	13.6%	264,948	24.2%	214,289	80.9%	55,056	20.8%	-	0.0%
SC	422	188	44.5%	1,624,956	31.6%	966,090	59.5%	302,267	18.6%	6,704	0.4%
SD	374	84	22.5%	95,762	10.8%	6,855	7.2%	1,175	1.2%	-	0.0%
TN	621	148	23.8%	1,759,892	25.4%	548,880	31.2%	238,771	13.6%	31,431	1.8%
TX	1,934	900	46.5%	18,244,721	62.4%	-	0.0%	-	0.0%	-	0.0%
UT	290	63	21.7%	453,358	13.8%	4,019	0.9%	1,419	0.3%	-	0.0%
VA	884	277	31.3%	3,272,161	37.9%	280,142	8.6%	55,446	1.7%	-	0.0%
VT	258	35	13.6%	34,745	5.4%	-	0.0%	-	0.0%	-	0.0%
WA	595	151	25.4%	1,830,879	23.8%	14,246	0.8%	-	0.0%	-	0.0%
WI	780	105	13.5%	908,491	15.4%	380,886	41.9%	266,241	29.3%	42,982	4.7%
WV	721	179	24.8%	252,296	14.1%	58,830	23.3%	12,990	5.1%	6,210	2.5%
WY	174	33	19.0%	38,242	6.6%	-	0.0%	-	0.0%	-	0.0%
Total	33,056	9,344	28.3%	132,044,095	39.9%	33,138,663	25.1%	16,492,553	12.5%	4,484,646	3.4%

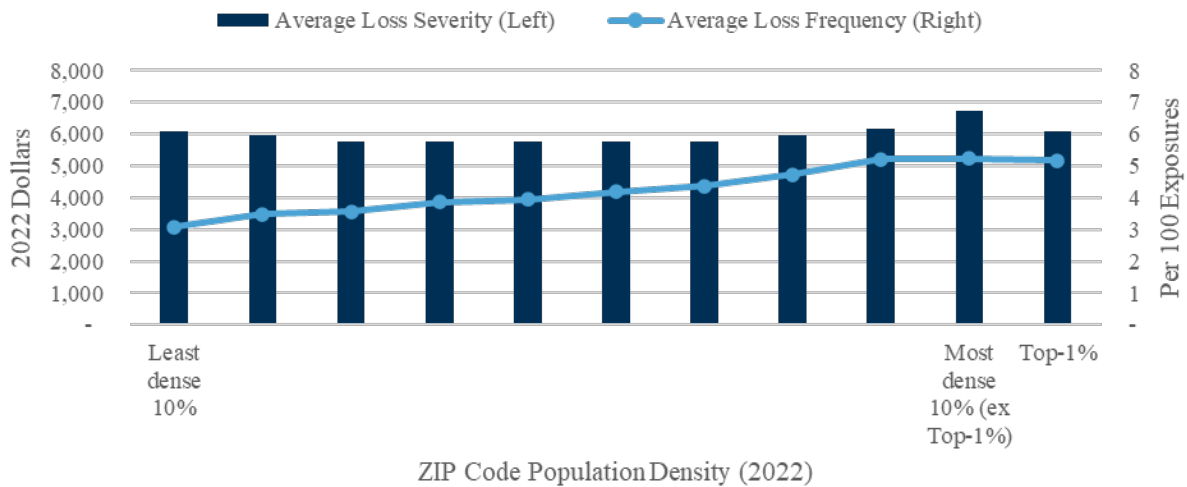
**Appendix C. Additional Analyses for All FR Limits Policies, 2022**

**Figure C.1: Average Annual Loss Frequency and Loss Severity by Median Household Income, 2022**



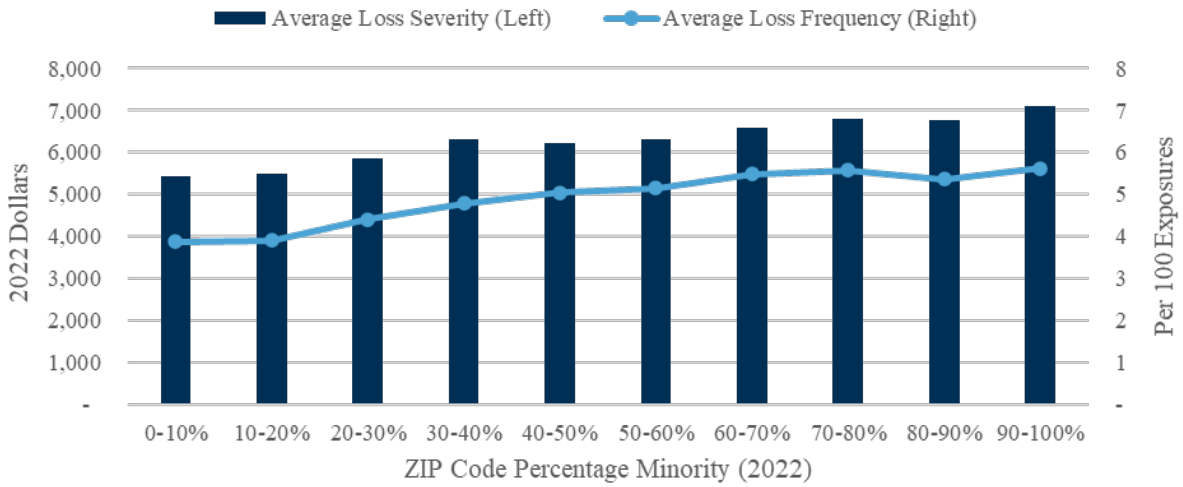
Source: 2022 U.S. Census Bureau and statistical agent claims data

**Figure C.2: Average Annual Loss Frequency and Loss Severity by Population Density, 2022**



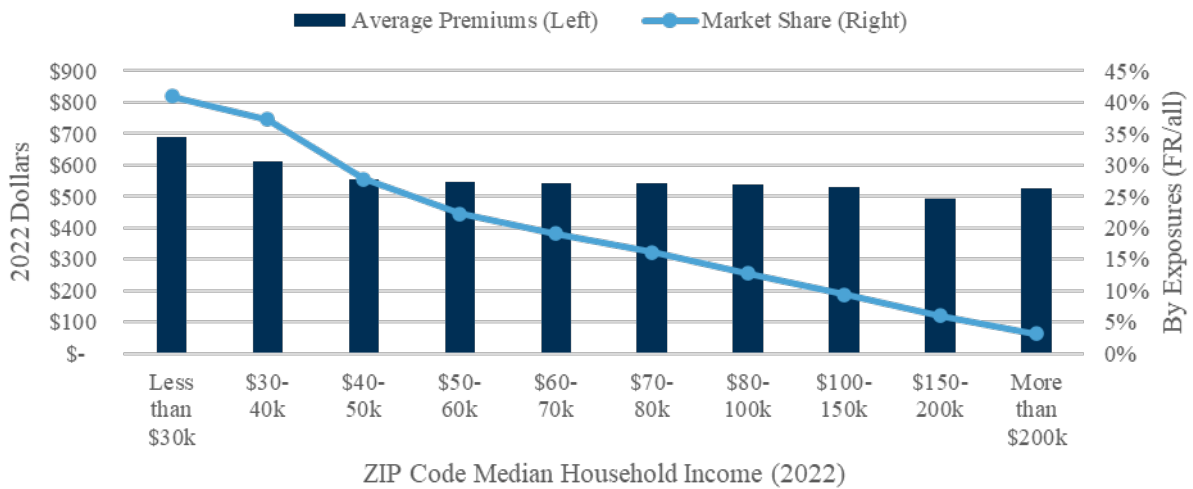
Source: 2022 U.S. Census Bureau and statistical agent claims data

**Figure C.3: Average Loss Frequency and Loss Severity by Percentage Minority Population, 2022**



Source: 2022 U.S. Census Bureau and statistical agent claims data

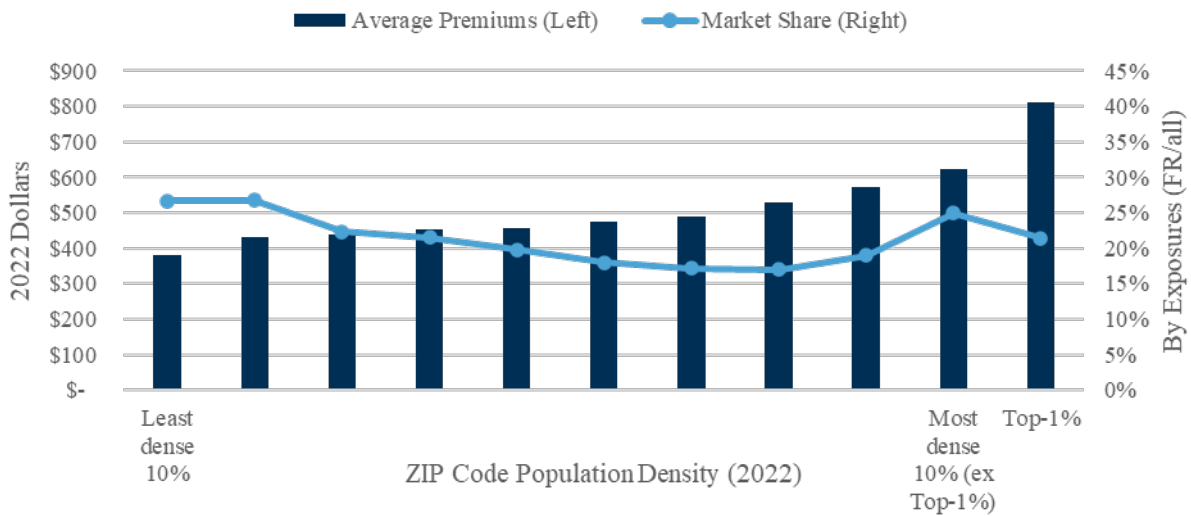
**Figure C.4: Premiums and Market Share by Median Household Income, 2022**



Source: 2022 U.S. Census Bureau and statistical agent premium data

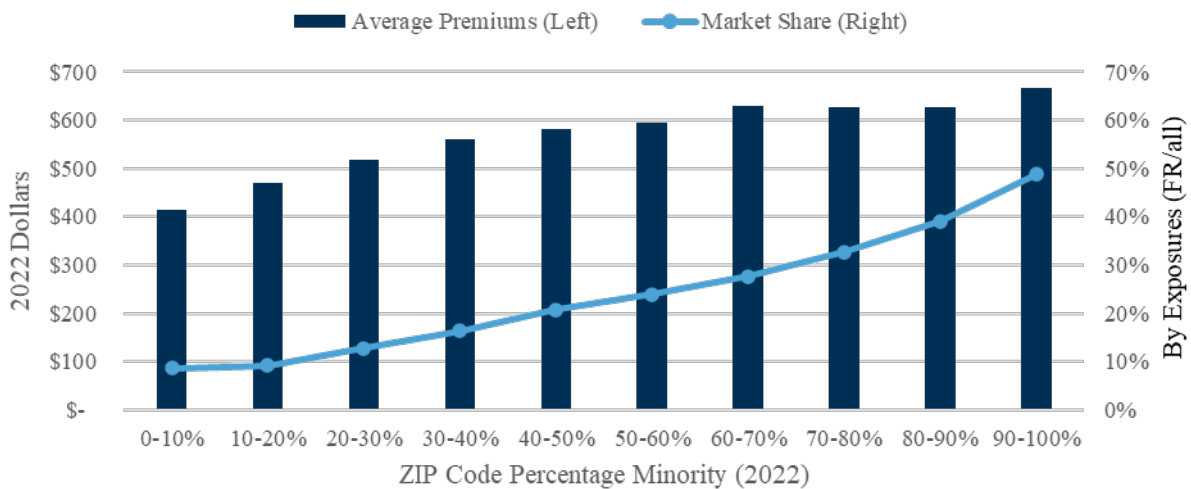


**Figure C.5: Premiums and Market Share by Population Density, 2022**



Source: 2022 U.S. Census Bureau and statistical agent premium data

**Figure C.6: Premiums & Market Share by Percentage Minority Population, 2022**



Source: 2022 U.S. Census Bureau and statistical agent premium data