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The New Regulatory Imperative for Insurance

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Abstract: This Article addresses emerging gaps in consumer protection. Insurers, like companies in other industries, are revolutionizing their practices with artificial intelligence and big data. Insurers are finding new ways to price risks and policies, tailor coverage, offer advice to purchasers, identify fraud, and sequence the payment of claims. These changes have subverted consumer protections built into current regulatory regimes, and regulators are struggling to adapt. This is not a niche problem. Insurance is a vital part of the U.S. economy: it rakes in over 1.2 trillion dollars in premiums a year; employs more than 2.7 million people; and undergirds transactions as simple as home purchases and as complex as corporate mergers and acquisitions, the multi-trillion-dollar tort system, and a vast system of private risk management and loss avoidance advice. Despite playing these critical roles, the insurance market is surprisingly inefficient. Deep information asymmetries make it difficult for consumers to evaluate the quality of policies and carriers, for insurers to price risks properly, and make it possible for both sides to act opportunistically. Further, behavioral barriers hamper purchasers, who often buy too little or the wrong insurance. And, in some markets, private insurers might not be willing to supply enough insurance because the underlying risks cannot be adequately spread. Insurance regulation is a necessary part of solving these complex market failures. Most of the previous legal scholarship about algorithmic justice has been in the context of information platforms, criminal justice, and employment discrimination. This Article connects to those discussions and expands them in the specific context of insurance. It does so by providing a taxonomy of the changes in the insurance industry, the potential danger to consumers as a result of those changes, the reasons for regulation, and the ways that regulators must adapt to protect individual consumers and the insurance market.

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INTRODUCTION

In January 2019, New York's Department of Financial Services issued a guidance letter to life insurers.[1] The letter requires insurers that price their policies with "algorithms and predictive models" to take care not to include data about "race, color, creed, national origin, status as a victim of domestic violence, past lawful travel, or sexual orientation in any manner, or any other protected class" for any underwriting or rating purpose.[2] The letter also requires that insurers using these models explain why some policyholders received higher prices than others.[3]

This letter presents a bit of a puzzle. On its face, it does nothing more than tell insurers to obey existing law and be transparent in doing so.[4] But, in reality, it represents a state wading into a new regulatory quagmire for insurance. The industry is undergoing a quiet revolution. New technologies—like artificial intelligence (AI)[5] powered by big data[6]—allow this once-staid indus-

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[1] *Insurance Circular Letter No. 1, RE: Use of External Consumer Data and Information Sources in Underwriting for Life Insurance*, N.Y. DEP'T OF FIN. SERVS. (Jan. 18, 2019) [hereinafter *Insurance Circular Letter No. 1*], https://www.dfs.ny.gov/industry_guidance/circular_letters/cl2019_01 [https://perma.cc/NG7Z-6DAB].

[2] *Id.*

[3] *Id.*

[4] New York law already prohibits insurers from using a policyholder's "race, color, creed, national origin, or disability" in pricing, see, for example, N.Y. INS. LAW § 2606(a)(1) (McKinney 2019), so the letter does nothing more than remind insurers of this existing responsibility and require additional transparency in doing so. *See generally* FRANK PASQUALE, THE BLACK BOX SOCIETY: THE SECRET ALGORITHMS THAT CONTROL MONEY AND INFORMATION (2016) (extolling transparency in dealing with algorithms).

[5] AI is best understood as a set of techniques employed by computer scientists to help computers rationally solve problems, no matter what obstacles they encounter. *See* NAT'L SCI. & TECH. COUNCIL, EXEC. OFFICE OF THE PRESIDENT, PREPARING FOR THE FUTURE OF ARTIFICIAL INTELLIGENCE 6–7 (2016) [hereinafter PREPARING FOR THE FUTURE]. Many of these techniques have been around for decades but have only recently become powerful enough to gain notoriety because computers are faster and computer scientists can now draw on vast collections of unstructured information—so-called big data. *See* Randy Bean, *How Big Data Is Empowering AI and Machine Learning at Scale*, MIT SLOAN MGMT. REV. (May 8, 2017), https://sloanreview.mit.edu/article/how-big-data-is-empowering-ai-and-machine-learning-at-scale/ [http://perma.cc/K4WP-WAVP] ("The availability of greater volumes and sources of data is, for the first time, enabling capabilities in AI and machine learning that remained dormant for decades due to lack of data availability, limited sample sizes, and an inability to analyze massive amounts of data in milliseconds.").

[6] In the past decades, AI has made significant advances based on increases in computing power, refinements in the algorithms that run the AI, and because of access to big data to train the algorithms. Big data are large, unstructured, and often unruly sets of data from a variety of sources, including information gathered from the internet and from the physical world. This can include information like "transactions, email, video, images, clickstream, logs, search queries, health records, and social networking interactions." Omer Tene & Jules Polonetsky, *Big Data for All: Privacy and User Control in the Age of Analytics*, 11 NW. J. TECH. & INTELL. PROP. 239, 240 (2013). Information from the physical world includes data from sources such as "sensors deployed in infrastructure such as communica-

try to transform the way it prices, creates, and delivers insurance policies; interacts with customers; and the way it analyzes and evaluates policyholder claims. New York's fear, a fear that is playing out throughout the country, is that these changes are undermining long-standing consumer protections.[7]

Pricing with AI permits an insurer to create more precise underwriting and pricing by analyzing more data—and new kinds of data—than traditional statistical methods allow. This has real upsides for insurers, which may be able to reap higher profits, gain a larger market share of the most desirable risks,[8] and mitigate the twin evils of insurance: adverse selection[9] and moral hazard.[10] But pricing with AI also allows insurers to intentionally, or inadvertently, exploit long-known market failures and burden policyholders in new ways. AI likely exacerbates information asymmetries between insurers and policyholders, which makes it more difficult for consumers to evaluate the prices they are

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tions networks, electric grids, global positioning satellites, roads and bridges, as well as in homes, clothing, and mobile phones." *Id.* (footnote omitted).

[7] New York is not the only state working on these new issues. The largest insurance regulatory organization, the National Association of Insurance Commissioners, has empaneled a multi-year working group to evaluate "both the potential concerns and benefits for consumers and the ability to ensure data is being used in a manner compliant with state insurance statutes and regulations." NAT'L ASS'N OF INS. COMM'RS, BIG DATA (EX) WORKING GROUP: WORK PLAN FOR 2017, at 1 (2017), https://content.naic.org/sites/default/files/inline-files/cmte_ex_bdwg_related_work_plan.pdf [https://perma.cc/6KPT-U6BF].

[8] Insurers that classify risks well can set more competitive prices, allowing them to add low-risk policyholders to their own pool and skim them away from competitors. This, in turn, lowers the insurer's risk of paying out and leaves competitors with a comparatively worse pool, raising the competitors' risk of paying out. *See* KENNETH S. ABRAHAM, DISTRIBUTING RISK: INSURANCE, LEGAL THEORY, AND PUBLIC POLICY 68 (1986); Tom Baker, *Containing the Promise of Insurance: Adverse Selection and Risk Classification*, 9 CONN. INS. L.J. 371, 377 (2003).

[9] Adverse selection is the fear that only high-risk policyholders will purchase insurance. When insurers price policies more accurately, the lower prices should help entice low-risk policyholders to buy insurance rather than go without. *See* Kenneth S. Abraham, *Efficiency and Fairness in Insurance Risk Classification*, 71 VA. L. REV. 403, 407 (1985) ("[I]nsurance is only one of a number of ways of satisfying the demand for protection against risk. With few exceptions, insurance need not be purchased; people can forgo it if insurance is too expensive."). *But see generally* David Hemenway, *Propitious Selection*, 105 Q.J. ECON. 1063 (1990) (discussing the concept of propitious selection wherein people with high levels of risk-avoidance are more likely to buy insurance); Peter Siegelman, *Adverse Selection in Insurance Markets: An Exaggerated Threat*, 113 YALE L.J. 1223 (2004) (suggesting that in some markets low-risk policyholders are more likely to purchase insurance because they are more risk averse than higher-risk policyholders).

[10] Moral hazard is the concern that once indemnified for a loss, policyholders will not take precaution to avoid the loss or mitigate the loss if it occurs. Pricing based on risk provides a signal to policyholders about their riskiness. If policyholders have control over the features upon which they are being classified, a higher price may encourage changes in insured behavior—either by taking more precaution or reducing the frequency of the risk-creating activity. *See* Abraham, *supra* note 9, at 413 ("Risk classifications should reflect differences in expected losses between classes of insureds; ideally, they should also create loss prevention incentives for insureds."); Tom Baker & Rick Swedloff, *Regulation by Liability Insurance: From Auto to Lawyers Professional Liability*, 60 UCLA L. REV. 1412, 1418–19 (2013).

given, may allow insurers to charge legally protected groups more for insurance, and may create new privacy burdens for policyholders. AI also allows insurers to individuate prices more easily based not on the risk that the policyholder will suffer a loss, but on the likelihood the policyholder will change carriers, thus making it more difficult for policyholders to find new coverage even in competitive markets.

Unfortunately, the classic regulatory response to these concerns—articulated by New York's guidance letter—will not work in this new world.[11] In the old world, prohibiting the use of certain features, and obvious proxies for those features, prevents invidious discrimination in insurance pricing. Requiring a causal story—that is, requiring the insurer to explain why one policyholder is paying more for the same coverage than another—makes it easier for the regulator to consider whether prices are based on riskiness and whether insurers should be using particular characteristics for pricing. These same approaches fall flat in the new world. Unlike traditional statistical methods, which require humans to first guess which traits are likely to be relevant to the risk that a policyholder will suffer a loss, AI does not have prior judgments about riskiness built into the model. The algorithm sorts through the data to find correlations in an iterative process.[12] Even if insurers require the AI to ignore certain prohibited categories, the algorithm can easily find a combination of factors that correlate with a prohibited category, resulting in significantly higher prices for protected groups. Likewise, AI does not work by creating a causal story and any attempt to fabricate one based on thousands of characteristics will be, at best, a post hoc rationalization.[13]

Pricing is but one of several AI-enabled changes in the insurance industry. Insurers are using AI and unstructured data to create new types of policies and individualize coverages for particular policyholders,[14] replace human insur-

[11] *Insurance Circular Letter No. 1*, *supra* note 1.

[12] Today's AI has significant advantages over older statistical techniques and older versions of AI. In contrast to traditional statistical techniques—where insurers have to choose a set of independent variables that they believe have some causal relationship to the subject being studied—today's AI allows computer algorithms to solve problems in a less-supervised way. This also stands in contrast to older AI techniques where programmers tried to make computers solve problems through emulating human experts by translating a human decision tree into software code. For example, one might teach a computer to play chess by coding a series of "if/then" statements: "if the pieces are in this position, an expert would make one of these decisions." *See* PREPARING FOR THE FUTURE, *supra* note 5, at 8. Today, machine learning and other techniques allow AI to learn in a less supervised manner. Data scientists write code to train the computer, but the AI learns to solve complex problems without the oversight of older techniques. *See id.* at 8–9; *see also* Ryan Calo, *Artificial Intelligence Policy: A Primer and Roadmap*, 51 U.C. DAVIS L. REV. 399, 405 (2017); Harry Surden, *Machine Learning and Law*, 89 WASH. L. REV. 87, 88 (2014).

[13] *See* James Davey & Rick Swedloff, Insurance Without Cause (Jan. 12, 2020) (unpublished manuscript) (on file with author).

[14] *See infra* Part II.

ance brokers and agents,[15] more cheaply identify fraudulent claims, and sequence claims for more efficient payment.[16] Each of these changes may undermine existing consumer protections aimed at fixing endemic market failures.[17] For example, information asymmetries make it difficult for consumers to understand and make good choices among different carriers and policies. Using AI to create new forms of coverage might erode protections aimed at making sure policy language is clear and policies contain minimum protections. AI-powered robo-advisors may work around licensing and education requirements for human intermediaries focused on protecting consumers from uninformed and unscrupulous advice-givers. And, when insurers expand their use of AI in fraud investigations, insurers may have a greater ability to act opportunistically and rescind contracts after a loss has occurred based on policyholder misstatements. AI further makes it easier and cheaper for insurers to investigate more claims, delay payment to more policyholders, and pay less to each claimant.

As AI changes how insurers use individual data, price risks, cover policyholders, and handle claims, the regulatory answers to existing market failures must adapt to continue to protect both consumers and the marketplace. This Article provides a theoretical and practical taxonomy of the challenges and concerns raised by insurers' use of new technology. It then offers thoughts about whether and how to change regulatory priorities. To make those decisions, regulators—including legislatures, courts, and state insurance agencies—have to ask not just "how" to regulate in this new world, but rethink "why." Fundamentally, this is a question of algorithmic justice. Most of the previous legal scholarship about algorithmic justice has been in the context of

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[15] *See infra* Part III.

[16] *See infra* Part IV.

[17] This is true even if one assumes that the data used to power the models that create these possibilities are unbiased, representative, and appropriate for the task. Big data has significant problems, including issues with reliability, bias, and representativeness. *See generally* Danah Boyd & Kate Crawford, *Critical Questions for Big Data: Provocations for a Cultural, Technological, and Scholarly Phenomenon*, 15 INFO. COMM. & SOC'Y 662, 668 (2012) ("Large data sets from Internet sources are often unreliable, prone to outages and losses, and these errors and gaps are magnified when multiple data sets are used together."). For example, "in the case of social media data, there is a 'data cleaning' process: making decisions about what attributes and variables will be counted, and which will be ignored. This process is inherently subjective." *See id.* at 667. Further, not everyone is on Twitter or Facebook, and those who do use such platforms are not created equally. Some users post far more often than others. *See id.* at 669. Moreover, given the enormous number of data points considered, there is a risk that the algorithms will find correlations with statistical significance even if there is no meaningful connection between the variables. *See* Tim Harford, *Big Data: Are We Making a Big Mistake*?, FIN. TIMES MAG. (Mar. 28, 2014), https://www.ft.com/content/21a6e7d8-b479-11e3-a09a-00144feabdc0 [https://perma.cc/CW9T-ELEH]; Gary Marcus & Ernest Davis, Opinion, *Eight (No, Nine!) Problems with Big Data*, N.Y. TIMES (Apr. 6, 2014), http://www.nyti.ms/1kgErs2 [https://perma.cc/GT3Z-5W5K].

information platforms, criminal justice,[18] and employment discrimination.[19] This Article connects to those discussions and expands them in the specific context of insurance.

This Article begins in Part I by laying out the basics of insurance regulation—control of pricing and pooling, oversight of coverage and insurance contracts, and supervision of insurers and their conduct in the market—and the reasons for those regulations.[20] That latter discussion is critical to understanding Parts II–IV, which describe more deeply the ways that AI is changing insurance business practices and the ways that regulators must respond to those concerns.

Part II focuses on insurers' use of AI to tailor prices more specifically to individual risks and to the consumer's individual willingness to pay, regardless of the risk presented.[21] Part III discusses the potential for insurers to use AI to create bespoke, individuated insurance policies.[22] Finally, Part IV discusses the use of robo-advisors and concerns about so-called claims-optimization.[23]

I. THE HOWS AND WHYS OF INSURANCE REGULATION

This Part briefly sketches the reasons for regulating insurance and the means by which legislatures, regulators, and courts do so. Insurance regulation can be broken into three rough categories: regulation of pricing and pooling, control of forms and coverage, and general oversight of insurers and their conduct in the market.[24] The justifications for these regulations differ in their par-

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[18] *See generally, e.g.*, ANDREW G. FERGUSON, THE RISE OF BIG DATA POLICING: SURVEILLANCE, RACE, AND THE FUTURE OF LAW ENFORCEMENT (2017); Sandra G. Mayson, *Bias in, Bias out*, 128 YALE L.J. 2218 (2019); Andrew D. Selbst, *Disparate Impact in Big Data Policing*, 52 GA. L. REV. 109 (2017).

[19] *See, e.g.*, Pauline T. Kim, *Data-Driven Discrimination at Work*, 58 WM. & MARY L. REV. 857, 869–92 (2017). *See generally* Solon Barocas & Andrew D. Selbst, *Big Data's Disparate Impact*, 104 CALIF. L. REV. 671 (2016) (discussing the disparate impact of data mining causing employment discrimination); James Grimmelmann & Daniel Westreich, *Incomprehensible Discrimination*, 7 CALIF. L. REV. ONLINE 164 (2017), http://www.californialawreview.org/wp-content/uploads/2017/04/GrimmelmannWestreich.final_-1.pdf [https://perma.cc/99GQ-7GDP] (discussing a fictional Supreme Court opinion addressing the concerns of data mining in employment decisions).

[20] *See infra* Part I.

[21] *See infra* Part II.

[22] *See infra* Part III.

[23] *See infra* Part IV.

[24] Traditional state regulators are involved in a number of different facets of the insurance industry, including the following: making sure that insurers have the financial capacity to pay in the event that their policyholders suffer the covered losses; overseeing the prices that insurers charge; regulating the content of insurance policies; requiring certain types of coverage; policing insurer behavior in advertising, sales, and the payment of claims; and operating residual pools to provide coverage to individuals who cannot afford coverage on the open market. *See* KENNETH S. ABRAHAM & DANIEL SCHWARCZ, INSURANCE LAW AND REGULATION: CASES AND MATERIALS 113 (6th ed. 2015).

ticulars, but all of the justifications can be traced back to two main themes: the important role that insurance plays in society and endemic market failures.

It is often unstated, but an obvious justification for insurance regulation is the importance of insurance in the economy. Policyholders pay over $1 trillion in insurance premiums annually[25] and the industry employs approximately 2.7 million people.[26] But more than these numbers, insurance undergirds large and diverse parts of the economy. Without insurance, transactions as simple as home purchases and as complex as corporate mergers and acquisitions would be prohibitively expensive,[27] the multi-trillion-dollar tort system would likely crumble,[28] and private parties would lose important risk-management and loss-avoidance advice.[29] Insurance also provides policyholders with both objective financial security and a subjective sense of security, which might increase policyholder wellbeing.[30]

The insurance market, however, is rife with inefficiencies. For example, there are significant information asymmetries in the marketplace.[31] "[T]here are limits to what an insurance company can find out about the people looking for insurance, and it's hard to monitor consumers' behavior once they have

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[25] *See Facts + Statistics: Industry Overview*, INS. INFO. INST., https://www.iii.org/fact-statistic/facts-statistics-industry-overview [https://perma.cc/SQF5-3QHD] ("U.S. insurance industry net premiums written totaled $1.22 trillion in 2018 . . . .").

[26] "The U.S. insurance industry employed 2.7 million people in 2018 . . . ." *Id.* This is approximately 2% of the labor force, which stood at approximately 130 million people in 2019, according to the Bureau of Labor Statistics. *See Labor Force Statistics from the Current Population Survey*, U.S. BUREAU OF LAB. STAT., https://www.bls.gov/cps/cpsaat08.htm [https://perma.cc/9LYY-D6BF] (last modified Jan. 22, 2020).

[27] For example, the guarantees provided by homeowners' insurance make home mortgages far more affordable. Banks are willing to lend to homebuyers, because they know that the insurance protect the security on which that loan is based, the home.

[28] Insurance is a key element to tort lawsuits, see generally Tom Baker, *Liability Insurance as Tort Regulation: Six Ways That Liability Insurance Shapes Tort Law in Action*, 12 CONN. INS. L.J. 1 (2005) (explaining, in part, how insurance is a precursor and regulator of tort liability), a key to almost every field of liability that has been studied carefully, see generally Baker & Swedloff, *supra* note 10 (showing how insurance shapes conduct and liability in fields as diverse as corporate conduct, medical malpractice, automobile liability, and legal malpractice), and shapes who sues whom, for how much, and for what, see Rick Swedloff, *Uncompensated Torts*, 28 GA. ST. U. L. REV. 721, 736–39 (2012) (explaining that insurance is a necessary precursor to most lawsuits). Given this, it is unsurprising that insurance and tort operate, as Ken Abraham so aptly phrased it, as twin stars revolving around each other. *See generally* KENNETH S. ABRAHAM, THE LIABILITY CENTURY: INSURANCE AND TORT LAW FROM THE PROGRESSIVE ERA TO 9/11 (2008).

[29] *See generally* Baker & Swedloff, *supra* note 10 (describing the mechanisms by which insurers regulate private conduct).

[30] *See* Spencer L. Kimball, *The Purpose of Insurance Regulation: A Preliminary Inquiry in the Theory of Insurance Law*, 45 MINN. L. REV. 471, 478–79 (1961).

[31] *See generally* Tom Baker & Peter Siegelman, *Behavioral Economics and Insurance Law: The Importance of Equilibrium Analysis*, *in* THE OXFORD HANDBOOK OF BEHAVIORAL ECONOMICS AND THE LAW 491 (Eyal Zamir & Doron Teichman eds., 2014) (describing the information problems facing insurers and consumers).

it."[32] Consumers likewise face significant information challenges. In part, these challenges exist because of the time lag between when consumers purchase policies and when consumers ask insurers to fulfill the policy's promise. This makes it difficult for consumers to evaluate whether insurers are selling the product they promised, engaging in risky investment strategies, or have unfair claims practices. The asymmetries also exist because insurers are repeat players in contracting, have more data on the causes of loss, and are more likely to have a steely-eyed view of the likelihood that any individual will suffer a loss. Regulators must thus step in because consumers do not have the knowledge, information, or skills necessary to evaluate the insurers' business methods, including the rates they receive, the terms of the policies, and the insurers' investment strategies or claims and settlement practices.

Information asymmetries are only part of the story. Insurance regulation also socializes certain risks more broadly and helps correct behavioral quirks of insurance consumers.[33] In some contexts, the risks that are borne by individuals are not easily spread in private markets. Where insurance markets fail to do so, risk spreading comes through regulatory socialization of the risk. There are multiple reasons that the market might not function properly to spread risk. For example, the current pandemic shows exactly how bad correlated risks can be. If one business interruption insurance policyholder suffers a risk, an entire nation does so. Likewise, the risk of flood or wildfire is highly correlated—if one home in an area suffers a loss, many will likely suffer the same loss. In these circumstances, it might be reasonable to subsidize or cross-collateralize that risk in some other way, such as across multiple types of disasters or across all homeowners in a state.[34] In other cases, insurance is social-

[32] *Id.* at 494. These information asymmetries lead to the adverse selection and moral hazard problems described above. *See supra* notes 9–10 and accompanying text.

[33] This Article borrows the term "socialization of risk" from Spencer Kimball, who used it to mean a pressure that often exists to expand coverage to cover a greater number of risks. *See* Kimball, *supra* note 30, at 512. This Article uses the term "socialization" in a slightly different way than Kimball. The term is used more broadly here to include a need to force coverage over a greater number of insureds to create adequate coverage. That said, this Article acknowledges that the term "socialization" invites a particular kind of attack, but in this context, insurance can only work when more people have coverage.

[34] Kyle Logue and Omri Ben-Shahar make two basic arguments against subsidized flood insurance. *See* Omri Ben-Shahar & Kyle D. Logue, *The Perverse Effects of Subsidized Weather Insurance*, 68 STAN. L. REV. 571, 576, 579, 586–89, 609–11 (2016). First, they show that the national flood insurance program does not encourage tighter and safer building codes. *See id.* at 576, 586–89. Second, they claim that flood insurance benefits the rich more than the poor. *See id.* at 579, 609–11. The first problem could be dealt with by the current program: to qualify, homeowners have to meet building standards. This is just insurance as governance in action. The second issue is more of a concern. But one could argue that beachfront ownership is valuable socially and something the government wants to encourage. Alternatively, one could argue that failure to subsidize would result in beachfront real estate being more unaffordable because homeowners would have to self-insure.

ized because it enables other policy goals. For example, when high-risk drivers are priced out of the auto insurance market, states often force private insurers to subsidize the actuarially fair rate through residual pools or other mechanisms.[35] This may make sense because driving is critical to employment and because auto insurance protects victims as much as drivers.[36] As such, it is incumbent on regulators to make sure that as many drivers as possible are covered by insurance.

In other situations, decision-making errors might lead to consumers purchasing less insurance than is reasonable. Consider, in this context, unemployment insurance and social security. Here, society might decide that it is important to provide some income to those who are temporarily out of work or those who are past the age of retirement.[37] To the extent that people are unable or unlikely to insure themselves adequately, the government could step in and mandate coverage. This is precisely the kind of coverage that substitutes for more traditional family and community risk spreading.

The remainder of this Part more fully fleshes out these ideas in the context of specific regulatory regimes. It is not meant to be a comprehensive list of regulations or of judicial and legislative interventions in the insurance market. Rather, this Part roughly covers the regulatory space affected by the introduction of AI into insurers' business practices. Section A discusses the regulation of pricing and pooling insurance.[38] Section B discusses the regulation of different coverage and forms of insurance.[39] Section C discusses the general regulation of insurers and the market.[40] As AI changes the way that insurers do business, the justifications for these regulations need rethinking. Some readers, those well versed in insurance regulation, may want to skip this Part.

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[35] Even if insurance is priced in an actuarially fair manner, for many high-risk individuals, insurance is simply unaffordable—that is, the actuarially fair price is beyond the individual's ability to pay. Where states value the underlying activity or the insurance provides socially valuable security, states can intervene in the market to subsidize the purchase of insurance. One common mechanism is a residual pool. Many states establish these to cover insurance for driving, medical malpractice, property insurance, beach and windstorm damage, and workers compensation. *See* ABRAHAM & SCHWARCZ, *supra* note 24, at 149–50. States typically do this by forcing insurers that participate in the "voluntary" market to take responsibility for profits and losses from people who are too high-risk to purchase insurance on the open market. Alternatively, states can force insurers to take on risks that they would not otherwise insure and then provide government reinsurance, allow the insurer to cross-subsidize high-risk policyholders with lower-risk ones in the voluntary market, and/or provide direct subsidies to keep rates low. *See id.*

[36] It does so by providing the inevitable victims of auto accidents with an easy, if often inadequate, source of compensation.

[37] This is as much a descriptive as a normative point, given the history of social security insurance.

[38] *See infra* Part I.A.

[39] *See infra* Part I.B.

[40] *See infra* Part I.C.

A. Regulation of Pricing and Pooling

In an ideal market, risks are evenly distributed across society, insurers charge each insured commensurate with that policyholder's risk, and policyholders can afford all of the insurance they desire. Insurers in this ideal world perfectly predict the probability that a particular policyholder will suffer a loss in the policy period and perfectly price the policy to match that risk.[41] Insurers are unable to charge more than the policyholder's expected loss because competition forces insurers to cut premiums to a price that matches the insurer's expenses, minus expected losses. Insurers that charge too much lose customers and market share, causing them to lower their prices; insurers that charge too little do not have enough capital to cover policyholder claims and go out of business. On the demand side, policyholders in an ideal market are wealthy enough to pay for the coverage they want.

But, of course, the market in the real world does not work that way. In the real world, there are information asymmetries between the insurers and the policyholders, individuals do not always make good decisions, and thin markets—and bad information—may allow insurers to price less than competitively. Further, when insurers charge actuarially fair prices, some policyholders might not be able to afford necessary coverage and some products might burden vulnerable groups in ways that society finds inappropriate.

Governments have a number of tools to deal with these market failures and public policy concerns, including traditional rate regulation, regulation of categories upon which insurers rate risk to protect vulnerable groups, limiting the amount of variation in risk classification, and the creation of residual pools.[42] These topics are covered below.

1. Limits on Risk Classification

Insurers generally try to price policies to match the risk that an insured will suffer a loss in the policy period and the likely size of that loss. To make that prediction, insurers compare the loss experience in the market generally with the features and experience of individual policyholders.[43] This pricing by

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[41] Abraham, *supra* note 9, at 408.

[42] *See* ABRAHAM & SCHWARCZ, *supra* note 24. InsurerTech and AI may be assisting with the identification of high-risk individuals, creation of smoother operating pools, etc., but there is no necessary regulatory response to these technological changes. Thus, the discussion of residual pools is limited in this Article.

[43] Abraham, *supra* note 9, at 413–14. Feature rating includes observable traits of the policyholder like age, weight, health, gender, whether the policyholder smokes or drinks, exercises, or has a family history of heart disease. Policyholders can only control some of these features. Experience rating looks at whether the policyholder has suffered losses in the past. The insurer then compares the fea-

risk is at the heart of what insurers do. Its general benefits and costs are well known in the literature, including increasing profits and managing moral hazard and adverse selection.[44]

In some cases, however, states limit the ability of insurers to price according to risk because of the social costs of risk classification. Pricing based on risk, even if accurate, could unfairly burden vulnerable groups and those whose riskiness is undeserved with higher prices or skimpier coverage, insurers might use information to price policies that should otherwise be kept private, and additional risk classification might be socially inefficient. Although there are other concerns with risk classification, these are the only concerns really addressed by regulation. This Subsection describes those concerns and the limited regulation that exists to address them.

Of course, all risk classification burdens some groups more than others: those who represent a higher risk of loss pay more than those who represent a lower risk. Whether this is fair depends on what particular conception of fairness one applies. Pricing based purely on the policyholder's individual risk of loss, a sort of libertarian pricing, seems fair because premiums represent something intrinsic to the policyholder and, to the extent technologically and economically feasible, no policyholder will be asked to subsidize another's riskiness with higher premiums. This then should allow insurers to more fully control moral hazard and adverse selection.

But purely risk-based pricing might be based on undeserved or immutable characteristics, or the riskiness might be based on historical and sociological injustices and inequities. Classifying explicitly on race, religion, or national origin likely reinforces existing inequalities by burdening the group with higher prices or by defining the group as inherently riskier.[45] One could argue that prohibiting use of those categories would be fair. In this context, fairness depends on a particular social construction of equity because the higher risks may be the result of historical burdens on a particular group. Similarly, prohibiting the use of an undeserved or uncontrollable characteristic in insurance pricing could be seen as fair, especially where the higher prices will not reduce the likelihood of the risk occurring.[46] For example, women who have suffered

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tures and experiences of the individual to the insurers' past losses across the population at large. *See id.*

[44] *See supra* notes 8–10 and accompanying text.

[45] Ronen Avraham et al., *Understanding Insurance Antidiscrimination Laws*, 87 S. CAL. L. REV. 195, 217 (2014) (arguing that using these suspect classifications "reinforces or perpetuates broader social inequalities or . . . causes some sort of expressive harm by acknowledging and legitimating that prior unfair treatment").

[46] *See* Deborah S. Hellman, *Is Actuarially Fair Insurance Pricing Actually Fair?: A Case Study in Insuring Battered Women*, 32 HARV. C.R.-C.L. L. REV. 355, 384–85 (1997). As Alexander Tabarrok notes in the context of pricing based on health risks:

domestic abuse need more health services throughout their lives, but charging more for these expected costs might be unfair under some conceptions of equity and equality.[47] This is true because the policyholders cannot change the immutable fact of having suffered domestic abuse to respond to higher prices and in no sense deserve the consequences of having been abused.

It likewise seems fair to prohibit pricing insurance on correlations that do not have obvious causal stories. Even where one could tell a plausible story, the pricing might seem unfair. Imagine that there is a correlation between death and the number of followers one has on Twitter. We could create a causal story for the correlation: for example, it could be that the person who tweets more, gains more followers, but does so at the expense of exercise and is thus likely to die earlier. But, in truth, this is just post hoc narrative construction. Does the ability to tell a plausible story change whether it is fair to use that characteristic? Does this correlation make it fair to use number of Twitter followers in risk classification? This is a complex question in the context of fairness and one that AI brings to the fore.

Risk classification also raises privacy concerns. Insurers might rely on intimate information such as credit score, HIV status, genetic information, sexual orientation, drug and alcohol use, lifestyle, exercise, etc., to price insurance.[48] Even if answers to these questions are relevant to pricing and risk, they might be part of a personal sphere of information that society wishes to protect. Nonetheless, if left unregulated, policyholders are forced to answer these intrusive questions, because if they fail to do so truthfully, they could be denied coverage or have coverage voided after a loss.[49]

Further, risk classification might be socially inefficient. If risk classification is expensive, but fails to bring new insureds into the pool, it is socially wasteful.[50] And, in some circumstance, classifying risks might inhibit high-risk, socially beneficial behaviors[51] or inhibit the acquisition of socially useful

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> First, the intuition that those with higher risks should bear the costs seems less justifiable when the higher risk is not a matter of choice. Is it right that someone with the Huntington's gene should have to pay potentially staggering insurance bills or even be denied health insurance altogether? Second, charging higher premiums will not reduce the number of people with Huntington's. Thus, in this case, there is no efficiency gain from charging high risk elements larger premiums (only a wealth transfer).

Alexander Tabarrok, *Genetic Testing: An Economic and Contractarian Analysis*, 13 J. HEALTH ECON. 75, 80 (1994).

[47] *See* Hellman, *supra* note 46, at 356–57, 369, 384.

[48] Avraham et al., *supra* note 45, at 207–08.

[49] *See infra* notes 209–210 and accompanying text.

[50] Avraham et al., *supra* note 45, at 208–09.

[51] *Id.* at 205. For example, if high medical malpractice insurance premiums drive obstetricians out of market, risk classification may be inefficient. *See* Rick Swedloff, *Risk Classification's Big Data*

information.[52] Lastly, higher rates might make it impossible for some people to participate in important life activities like driving and homeownership.

Given these concerns, it may be reasonable to have insureds who represent different levels of riskiness cross-subsidize each other, despite the infringement that this creates on the libertarian ideal of actuarial fairness. States have responded to these equity and equality concerns, albeit crudely. For example, some—but by no means all—states prohibit the use of particular variables, like race, religion, and national origin, to set prices for consumer lines of insurance.[53] For some lines of insurance, some states also ban the use of gender, sexual orientation, and age for pricing risk.[54] Similarly, some states prohibit health insurers from asking for or collecting genetic information.[55] And a much smaller set of states prohibit the use of genetic information for life and disability insurance, which can be seen as a response to fears about both privacy and encouraging the acquisition of valuable information.[56]

These regulations are fairly weak. Typically, these laws prohibit only the use of a characteristic as an independent variable in classifying risk. The laws do not necessarily ban the use of obvious proxies to prohibited characteristics—such as a zip codes for race—or consider the problem of systematically higher rates for suspect classes based on non-discriminatory characteristics—disparate impact.[57] In part, this weak regulation is a recognition that there is not a single conception of what is fair or just in insurance pricing. As will be discussed below, even these weak state protections are no longer viable in an era of AI-assisted risk assessment.

There is little federal backstop to state regulation—and what federal law exists is found only in the context of health and homeowners insurance. This is not surprising, given the limited role of the federal government in insurance regulation and the fraught discussion of fairness above. The Affordable Care Act (ACA) limits what features an insurer can use in setting health insurance rates and explicitly precludes the use of other features. Gender is not listed and

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(R)evolution, 21 CONN. INS. L.J. 339, 347–48 (2014). Left open is how to correct this inefficiency. Should, for example, the risk be spread across all medical malpractice insurance policyholders? Or should the public at large subsidize the behavior through tax subsidies or caps on damages?

[52] Avraham et al., *supra* note 45, at 210. For example, policyholders might forego genetic testing out of a fear that the test results might lead to higher insurance premiums. *Cf.* Tabarrok, *supra* note 46, at 80 (explaining why people may choose not to get genetic testing even if there is a possibility that the information gained could help minimize the risk of future harm).

[53] For an excellent review of state regulatory efforts in this vein, see Avraham et al., *supra* note 45, at 235–40.

[54] *See id.* at 241–66.

[55] ROBERT H. JERRY, II & DOUGLAS R. RICHMOND, UNDERSTANDING INSURANCE LAW 112–13 (5th ed. 2012).

[56] *See id.* at 113.

[57] *See* Avraham et al., *supra* note 45, at 212.

is therefore precluded in rate setting.[58] Consideration of preexisting conditions[59] and genetic predisposition to certain diseases are explicitly excluded.[60] Further, regulations promulgated by the U.S. Department of Housing and Urban Development (HUD) under the Fair Housing Act[61] prohibit a facially neutral practice that "may have a discriminatory effect" in the housing market.[62] HUD has interpreted this to extend to the sale of homeowners insurance.[63]

2. Traditional Rate Regulation

In addition to these limits, most states regulate insurance rates like public utilities to make sure that insurance prices are not "excessive, inadequate, or unfairly discriminatory."[64]

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[58] The Patient Protection and Affordable Care Act of 2010 (ACA) provides a list of factors that health insurers can use in setting rates, including tobacco use, age, and geography, but not gender. *See* 42 U.S.C. § 300gg(a)(1)(A)(i)–(iv) (2018). The law further specifies maximum premium variations based on this exclusive set of factors. *Id.* § 300gg(a)(1)(B).

[59] The Health Insurance Portability Accountability Act of 1996 requires group insurers to meet specific exceptions to deny health coverage due to an insured's preexisting condition and precludes consideration of genetic information as a condition. *See* 29 U.S.C. § 1181 (2018). The ACA prohibits all health insurers from denying coverage on the basis of preexisting conditions and health status more generally. *See* 42 U.S.C. §§ 300gg-3 to -4.

[60] The Genetic Information Nondiscrimination Act of 2008 instituted general protections for individuals from genetic discrimination in health insurance and employment. Pub. L. No. 110-233, 122 Stat. 881 (codified as amended at scattered sections of 26, 29, and 42 U.S.C.). Specifically, federal law now forbids the use of genetic information in determining eligibility for employment and the pricing of health insurance. *See* 29 U.S.C. § 1182(c)–(f); 42 U.S.C. § 300gg-4.

[61] The Fair Housing Act makes it unlawful "[t]o refuse to sell or rent after the making of a bona fide offer, or to refuse to negotiate for the sale or rental of, or otherwise make unavailable or deny, a dwelling to any person because of race, color, religion, sex, familial status, or national origin." 42 U.S.C. § 3604(a) (2018).

[62] *See* Implementation of the Fair Housing Act's Discriminatory Effects Standard, 78 Fed. Reg. 11,460 (Feb. 15, 2013) (codified at 24 C.F.R. pt. 100).

[63] *Id.* at 11,475.

[64] ABRAHAM & SCHWARCZ, *supra* note 24, at 111. In the wake of the McCarran-Ferguson Act, Pub L. No. 79-15, 59 Stat. 33 (1945) (codified as amended at 15 U.S.C. §§ 1011–1015)—federal legislation leaving insurance regulation to the states—states passed laws to ensure that the insurance rates would be regulated by state law. ABRAHAM & SCHWARCZ, *supra* note 24, at 111. Many states enacted these regulations to exempt the insurance industry from federal antitrust regulation. *See id.* This particular form of oversight was historically justified by fears that insurance markets were not competitive. In the 1800s and early 1900s, regional groups of fire insurers, the precursor to modern-day property insurers, shared claims data and suggested rates to member insurers. *See* Daniel Schwarcz, *Ending Public Utility Style Rate Regulation in Insurance*, 35 YALE J. ON REG. 941, 953 (2018). Given the limits of the data available at the time, this pooling may have been the only way insurers could figure out how to appropriately price policies. But states reasonably feared groups becoming similar to a "combination of fire insurance companies [that] was exactly like a trust, [and] that there [would be] no internal competition among its members," and insurance companies would charge monopoly prices. *Id.* (quoting STATE OF N.Y., REPORT OF THE JOINT COMMITTEE OF THE SENATE AND ASSEMBLY OF THE STATE OF NEW YORK, APPOINTED TO INVESTIGATE CORRUPT PRACTICES IN CONNECTION

Excessive rates are those that exceed the insurer's expected losses, expenses, and reasonable profit minus the insurer's investment income. When an insurer's rates cannot cover its expected future payouts, the rates are inadequate. Rates are discriminatory when low-risk policyholders are charged more for their policies than their expected losses and high-risk policyholders are charged less.[65] In other words, the prohibition on discriminatory rates has nothing to do with protected minority groups or suspect classes, but rather with cross-subsidization of insurance rates.

Regulators have good cause to be concerned about excessive and discriminatory rates in a non-competitive market. Economic theory suggests that sellers in that market will charge consumers higher prices and price sensitive consumers will forego purchasing the good—this is a so-called monopolist deadweight loss.[66] Moreover, those who need the good or are otherwise price insensitive, will buy it, allowing the monopolist to keep the consumer surplus from those purchasers (the amount of value the consumer places on the good over the competitive price).[67]

The justification for continued review of excessive and discriminatory rates is unclear. As one scholar has argued, insurers no longer share data to the same extent, the market is more competitive, and insurers now explicitly compete on price.[68] This competition should eliminate excessive rates and unjustified cross-subsidization[69] and potentially undermines the propriety of rate regulation.[70]

The justification for regulation of inadequate rates is a bit different. Without this kind of oversight, unscrupulous, fly-by-night insurers may charge too little for their policies, driving insurers that are charging more out of the market. Those charging inadequate rates may then not have sufficient capital to

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WITH LEGISLATION, AND THE AFFAIRS OF INSURANCE COMPANIES, OTHER THAN THOSE DOING LIFE INSURANCE BUSINESS, ASSEMB. DOC. NO. 30, at 66 (1911)).

[65] *See* Schwarcz, *supra* note 64, at 943; *see also* PROP. & CAS. MODEL RATING LAW § 5(A)(3) (NAT'L ASS'N OF INS. COMM'RS 2010), https://www.naic.org/store/free/GDL-1775.pdf [https://perma.cc/Z34R-ERZU] ("Unfair discrimination exists if, after allowing for practical limitations, price differentials fail to reflect equitably the differences in expected losses and expenses.").

[66] *See* Oren Bar-Gill, *Algorithmic Price Discrimination When Demand Is a Function of Both Preferences and (Mis)perceptions*, 86 U. CHI. L. REV. 217, 220 (2019).

[67] *See id.* at 220–21.

[68] *See* Schwarcz, *supra* note 64, at 945.

[69] Of course, there will always be some heterogeneity and cross-subsidization in a pool. Risk classification is expensive, and insurers cannot perfectly assess any individual's risk. *Cf.* Peter Siegelman, *Information & Equilibrium in Insurance Markets with Big Data*, 21 CONN. INS. L.J. 317, 325 (2014). But, as noted above, insurers have significant incentives to classify risk as perfectly as possible given cost constraints. *See supra* notes 8–10 and accompanying text. The concern is not marginal and justifiable cross-subsidization, but something more substantial.

[70] *See* Schwarcz, *supra* note 64, at 945.

pay claims when they come due. This goes hand in hand with solvency regulation, which will be discussed more fully below.[71]

AI raises new issues about the competitive nature of the markets. Insurers are using price discrimination to charge policyholders based on their willingness to pay rather than their riskiness. Price discrimination occurs when sellers can determine which of their consumers are sensitive to prices and charge higher prices to those willing to pay more.[72] Price discrimination should only exist in non-competitive markets.[73] That AI enables this to happen in consumer lines of insurance, which are seemingly competitive markets, raises new concerns.

B. Regulation of Coverage and Forms

Because consumers have a difficult time evaluating carriers and the coverage offered, the government regulates insurance coverage in several ways. In some circumstances, legislatures mandate a minimum amount of coverage or require certain groups to purchase insurance to participate in certain activities.[74] Legislatures and regulators also oversee the content of insurance forms for both clarity and the scope of coverage.[75] And, of course, courts interpret policy language to give effect to the contract and the legislature's and regulator's guidance.[76]

The conceptual divide between and among these forms of oversight are less strict than they might appear on their face. For example, some states prohibit carriers from excluding coverage for innocent co-insureds—that is, the carrier must provide coverage for a loss caused intentionally by one of several insureds, as when a husband intentionally burns a home jointly owned with a wife.[77] On the one hand, this might be seen as a regulation of forms because the state effectuates its aim through required or prohibited policy language. But the prohibition also acts as a means of mandating additional coverage, because insurers must offer—and consumers must buy—coverage that they may not

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[71] *See infra* Part III.C.1.

[72] Lars A. Stole, *Price Discrimination and Competition*, *in* 3 HANDBOOK OF INDUSTRIAL ORGANIZATION 2221, 2227 (Mark Armstrong & Robert H. Porter eds., 2007).

[73] *Id.* at 2226 ("It is well known that price discrimination is only feasible under certain conditions: (i) firms have short-run market power, (ii) consumers can be segmented either directly or indirectly, and (iii) arbitrage across differently priced goods is infeasible.").

[74] *See infra* Part I.B.II.

[75] *See infra* Part I.B.I.

[76] *See infra* Part I.B.III.

[77] Some states have mandated such coverage legislatively, see, for example, NEB. REV. STAT. § 44-7406(6) (2019); WASH. REV. COD. § 48.18.550 (2019); others through judicial action, see, for example, Borman v. State Farm Fire & Cas. Co., 521 N.W.2d 266, 270 (Mich. 1994). For the most part, these coverages are seen as a means of protecting women who have been the victims of domestic abuse.

otherwise. Further, when policies are ambiguous as to whether they provide the mandated coverages, courts will interpret the insurance contract consistent with the state's policy aims.

This Section discusses the government's regulatory activity and the purpose for that activity.

1. Policy Forms

Most states lightly regulate the content and form of insurance policies in personal insurance markets. Regulators limit their oversight to guarantee that policies are not ambiguous; unreasonable; or against specific state rules, such as rules limiting the ability of insurers to object to insured misrepresentation after a period of time, requiring insurable interests, or requiring coverage for innocent co-insureds.[78] This oversight can take several forms, including requiring specific language,[79] mandating minimum coverage regardless of policy language,[80] or prohibiting particular terms.

This oversight is justified, in part, by information asymmetries between insurers and their consumers. Insurers are in a better position to understand the implications of language choices in policies. They are repeat players in litigation that interprets particular clauses, are experts in the forms they write, and it is their business to know how often certain kinds of losses occur. In contrast, individual policyholders likely have no legal expertise, no experience reading and interpreting contract terms, no real experience with coverage and exclusion language, and no way to predict the likelihood of different kinds of losses. Regulators can, in theory, protect uneducated consumers from unclear and deceptive policy language.

This simple justification is not complete. Insurers should be able to outcompete based on clearer language and a reputation for better coverage. And yet, form review—or some minimal form review—continues. This continued oversight might be explained away by regulatory inertia—the notion that regulators are unlikely to change the way they oversee the industry unless an exog-

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[78] ABRAHAM & SCHWARCZ, *supra* note 24, at 143 ("States often have various other policy form requirements—ranging from required coverage for innocent co-insureds to prohibitions on absolute pollution exclusions or mandatory arbitration provisions . . . .").

[79] For example, many states require that life insurance policies contain language explaining that the policy cannot be contested after it has been in force for two years. *See id.* at 321 ("All life insurance policies issued in this country . . . contain what is known as an 'incontestability clause.' Some states require that such clauses conform to specified requirements; others do not."); Robert Works, *Coverage Clauses and Incontestable Statutes: The Regulation of Post-Claim Underwriting*, 1979 U. ILL. L.F. 809.

[80] For example, coverage for innocent co-insureds could be required as a statutory matter regardless of policy exclusions. *See supra* note 77 and accompanying text.

enous shock forces change.[81] Regulators have always minimally evaluated policy forms and therefore continue to do so even if it is not strictly necessary.

There may, however, be another reason for form regulation. It may be that individual consumers simply cannot or will not ever fully understand policy language. As a result, insurers can narrow coverage and sell products that are less complete for their policyholders without negative market reactions. This may be true for a number of reasons: because information asymmetries may be persistent and difficult to eliminate,[82] because individual understanding and prediction about risks is poor,[83] or because there is no instantaneous feedback about the quality of insurance products due to the nature of the good, leading to a "lemons" problem.[84]

If this is true, some regulatory oversight over policy content is necessary to socialize the risks covered (spread the risks to a greater number of people) and guarantee the security that insurance promises. Most form review is minimal, at best, but even that minimal review ensures that the policies offered to consumers are not empty coverage shells. This creates more coverage for more people, thus spreading the covered risks more broadly. This additional coverage, in turn, creates greater security for policyholders in both the objective and subjective sense.

2. Mandated or Minimum Coverage

The government also regulates insurance by requiring that consumers purchase a minimum amount of coverage to participate in certain activities. For example, in almost every state, anyone who registers a motor vehicle must obtain a minimum amount of automobile liability insurance,[85] and some states require professional liability insurance to practice medicine and law.[86] Even

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[81] Regulatory inertia refers to the fact that insurance law has "moved forward only under considerable pressure, and then with little conscious planning." *See* Kimball, *supra* note 30, at 476.

[82] There may be no way to correct the information asymmetries that exist. Policy choices are complicated, and it is not clear that policyholders have the experience necessary to differentiate among options even if insurers do compete on policy terms and content.

[83] Potential policyholders might, for example, underestimate the risks that insurance covers, inappropriately shop based on prices, or have too little experience with the covered losses and insurance practices to make good choices when purchasing insurance.

[84] If policyholders cannot choose well among a set of insurance options, bad contracts might drive out good ones by underpricing them. No matter how one conceptualizes this problem, the result would be less coverage overall. George A. Akerlof, *The Market for "Lemons": Quality Uncertainty and the Market Mechanism*, 84 Q.J. ECON. 488, 492–93 (1970).

[85] ABRAHAM & SCHWARCZ, *supra* note 24, at 656; TOM BAKER & KYLE D. LOGUE, INSURANCE LAW AND POLICY: CASES AND MATERIALS 402 (3d ed. 2013).

[86] Almost all states mandate that doctors have medical malpractice insurance. Michelle M. Mello, UNDERSTANDING MEDICAL MALPRACTICE INSURANCE: A PRIMER 1 (2006). Only Oregon requires legal professional liability insurance for all lawyers, but several others require it for lawyers practicing

where insurance is not legally required, it is often a practical requirement. For example, banks generally require those who obtain home mortgages to purchase a home to also purchase homeowners' insurance on the property.[87] Further, states require certain businesses to obtain workers' compensation insurance to protect employees,[88] and the federal and state governments require, through payroll taxes, coverage for social insurance programs such as Medicare, Social Security, and unemployment insurance.[89]

In some instances, states also require minimum dollar values for coverage or require specific coverage provisions. These interventions range in intrusiveness. On the strong side of the spectrum, for example, are states that require high accident limits for auto insurance and the ACA's requirements that health insurance plans cover a wide variety of potential health conditions. On the low end of the spectrum, for example, are states that require lower amounts of auto coverage or a requirement that policies include relatively minor, but socially and politically important provisions, like coverage for innocent co-insureds.[90]

These interventions in the insurance market serve a number of ends. At a minimum, they create more coverage for more people, thus creating additional security and spreading risks more broadly. But these interventions are often justified in additional ways. For instance, mandatory auto insurance and the concomitant minimum coverage requirement do not really provide security for the driver, rather the security extends to auto accident victims.[91] Without insurance, most victims of auto accidents would be left without compensation.[92] Thus, auto insurance is justified, in large part, because it serves to protect victims of predictable accidents and enables the tort system. Similarly, mandatory malpractice insurance can be justified by the remedies it creates for tort victims.

Further, some mandatory coverage might be justified by societal commitments, because of behavioral errors, or by some crude cost-benefit analysis.

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as part of limited liability entities, and many more encourage it by requiring that lawyers disclose whether they have liability insurance. *See* Baker & Swedloff, *supra* note 10, at 1438.

[87] *See* Sharon Tennyson, *Efficiency Consequences of Rate Regulation in Insurance Markets* 5 (Networks Fin. Inst., Policy Brief No. 2007-PB-03, 2007), https://pdfs.semanticscholar.org/2796/090afc16b40a31891b271ce57a55e0c73367.pdf?_ga=2.90036569.355668399.1586380403-1432409253.1581987307 [https://perma.cc/2SPU-5KXQ].

[88] *See generally* 1 LEX K. LARSON, LARSON'S WORKERS' COMPENSATION LAW (rev. ed. 2019) (discussing requirements for workers' compensation).

[89] *See, e.g.*, 26 U.S.C. §§ 3101, 3102(a)–(b), 3402, 3403 (2018).

[90] *See* ROBERT E. KEETON ET AL., INSURANCE LAW: A GUIDE TO FUNDAMENTAL PRINCIPLES, LEGAL DOCTRINES, AND COMMERCIAL PRACTICES § 4.10, at 333–44 (2d ed. 2017) (describing the history of auto insurance and the varied requirements among the states); *see also* ABRAHAM, *supra* note 28, at 69–103.

[91] *See* KEETON ET AL., *supra* note 90, § 4.10(a)–(c), at 335–38 (describing the history of auto insurance and the connection to the demand for compensation for victims); *see also* ABRAHAM, *supra* note 28, at 69–103.

[92] *See generally* ABRAHAM, *supra* note 28.

Social Security and Medicare, for example, are partially justified because most people are not saving adequately for their retirement and citizens do not want to live in a society where those beyond working age are left without a means to take care of themselves.[93] These programs might also be justified because some form of income for those beyond working age allows family members to avoid the opportunity costs of providing personal care.[94]

3. Judicial Regulation

Courts also play a role in regulating the content of insurance policies. When courts interpret policies, they regulate the scope of coverage provided by the insurers.[95] It is not necessary to go into any real depth about the ways that ambiguity can be introduced into a contract, the ways that insurance contracts are interpreted, or the decision-making processes of the courts to understand this vital role. In short, courts can interpret phrases in an insurance policy to have a particular meaning that can define the scope of coverage in a particular way.

Courts may choose to do so because the insurer is in the best position to write a policy clearly,[96] because the policyholder might have reasonable expectations of coverage that are undermined by narrowly written contracts,[97] or because a narrower construction of coverage would create a disproportionate forfeiture on the policyholder.[98] These rationales are justified, in part, because the insurer, which writes the policies, better understands the likelihood of policyholder loss and is a repeat player in the litigation system. Thus, the insurer has a significant informational advantage over the policyholder.

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[93] *See* Rick Swedloff, *Can't Settle, Can't Sue: How Congress Stole Tort Remedies from Medicare Beneficiaries*, 41 AKRON L. REV. 557, 569 (2008).

[94] *See* Allison K. Hoffman, *The Reverberating Risk of Long-Term Care*, 15 YALE J. HEALTH POL'Y L. & ETHICS 57, 58 (2015) (arguing that the responsibility of caring for a loved one creates "staggering costs—both monetary and nonmonetary"). Unemployment insurance can be similarly justified. One might believe that society should care for those who are temporarily displaced from the labor market. Alternatively, one could believe that unemployment insurance defrays the costs associated with unemployment, such as homelessness and bankruptcy.

[95] *See generally* JERRY & RICHMOND, *supra* note 55.

[96] *See generally* Michelle E. Boardman, Contra Proferentem*: The Allure of Ambiguous Boilerplate*, 104 MICH. L. REV. 1105 (2006) (explaining that contract drafters may be writing for courts, not counter-parties, because no one reads or understands the contracts).

[97] *See generally* Robert H. Jerry, II, *Insurance, Contract, and the Doctrine of Reasonable Expectations*, 5 CONN. INS. L.J. 21 (1998) (providing an overview of the doctrine of reasonable expectations).

[98] *See generally* Bob Works, *Excusing Nonoccurrence of Insurance Policy Conditions in Order to Avoid Disproportionate Forfeiture: Claims-Made Formats as a Test Case*, 5 CONN. INS. L.J. 505 (1999) (arguing courts interpret policies to make sure that precise adhesion to policy language does not result in a disproportionate forfeiture).

Regardless of the justification, these decisions can have a lasting effect on coverage beyond the particular parties at suit. These decisions could bind particular insurers because of res judicata or simply be an important precedent for the insurer and other insurers in the market that have the same policy language.

C. General Oversight of Insurers and Markets

Regulators also oversee the business practices of insurers to eliminate opportunistic behavior. Policyholders pay premiums in advance for a promise of future security. The payment-for-future-promise arrangement makes it possible for insurers to act in ways that increase their bottom line without fulfilling the essential promises of the insurance policy. Regulators watch over how insurers market products, price coverage, invest premiums, and handle claims to limit this opportunism.

1. Solvency

A core function of state insurance regulators is to guarantee the fiscal stability of insurers. The long-term and contingent promise of insurance is only valuable so long as an insurer has the financial wherewithal to make good on its promises when claims come due.

Insurers generate revenue both by taking in money from policy premiums and from the investment income on the float—the period of time between taking in the premiums and paying out the losses. Insurers could make a number of decisions that could undermine their financial stability. For example, insurers could charge too little for coverage, spend too much on administrative overhead or on advertising to induce new policyholders into the fold, and they could purchase speculative or risky investments.

Policyholders are not, however, best able to identify which insurers make risky investments or have risky underwriting practices. First, other than word of mouth, there is little that a policyholder can do to evaluate the financial stability of a potential insurer. It is difficult to get or understand the financials of an insurer and unlikely that a long-term policyholder would regularly reevaluate that question at policy renewal. Further, policyholders would only get direct feedback about an insurer's ability to pay when the policyholder has already suffered a loss. These events are likely too infrequent to provide necessary feedback to make educated decisions.

Second, policyholders have little ability to negotiate about management or investment strategy with an insurer. Managers and owners of insurance companies may have incentives to take on risky management or investment practices. But, unlike lenders, who can condition loans on certain investment behaviors, policyholders have no ex ante leverage other than rejecting the insurance coverage offered.

This suggests that there are at least two market failures that justify solvency regulation. First, there is an information gap: policyholders do not know and often cannot easily ascertain which insurers are fiscally sound. Second, there is an agency problem: managers may act in ways that are not beneficial for the policyholders who provide the working capital for the firm.

Solvency regulation increases the security that insurance provides. By guaranteeing that insurers can pay legitimate claims, regulators are further guaranteeing that policyholders will obtain the peace of mind they purchased. This, in turn, creates a greater level of subjective security for the policyholders.[99]

2. Insurance Intermediaries

Insurers often use intermediaries—brokers or agents—to form a bridge between the insurer and the policyholder. Intermediaries can help policyholders understand confusing policies and multitudinous policy options,[100] overcome biases and heuristics that make insurance buying difficult,[101] and level information gaps between policyholders and insurers.[102] But, intermediaries are not equally good at their jobs and do not necessarily have the proper set of incentives to do their best for consumers. As with the underlying insurance products, consumers are unlikely to have the information or ability to evaluate intermediaries.[103] Regulators and courts intervene, albeit lightly, to correct these market failures.

Before considering the regulatory response, consider how intermediaries may act opportunistically. Some intermediaries may not invest in their own education or stay up to date on the latest changes in policies or policy offerings. For others, the compensation structure might encourage intermediaries to offer policies that are not as good for the consumer as other available op-

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[99] *Cf.* Kimball, *supra* note 30, at 491–500.

[100] Insurance products are varied and complex. *See generally* Daniel Schwarcz, *Reevaluating Standardized Insurance Policies*, 78 U. CHI. L. REV. 1263 (2011) (discussing the variety among homeowners insurance across different insurance carriers). And, even among those lines that are fairly commoditized, policyholders themselves are very different in terms of their attitudes toward risk, riskiness, and ability to withstand a loss. *See* Daniel Schwarcz & Peter Siegelman, *Insurance Agents in the Twenty-First Century: The Problem of Biased Advice*, *in* RESEARCH HANDBOOK ON THE ECONOMICS OF INSURANCE LAW 36, 37 (Daniel Schwarcz & Peter Siegelman eds., 2015). This makes it very difficult for consumers to find the optimal mix of policy features in terms of deductibles, limits, and endorsements without help. *See id.*

[101] *See* Schwarcz & Siegelman, *supra* note 100, at 38 ("Framing effects, loss-aversion, availability bias, affective clouding and a large and growing catalog of other behavioral frailties have been demonstrated in both simulated and real-world insurance purchases.").

[102] Tom Baker & Benedict Dellaert, *Regulating Robo Advice Across the Financial Services Industry*, 103 IOWA L. REV. 713, 723 (2018).

[103] *Id.* ("Consumers are almost as poorly equipped to identify the quality of an intermediary as they are to evaluate the quality of the [insurance] products.").

tions.[104] And, even when intermediaries are generally knowledgeable and are not unduly influenced by commissions, the time spent learning the specific needs of a particular client might be more lucratively spent on marketing and obtaining new clients.

Regulators use licensing and continuing education requirements to ensure that intermediaries have a minimum level of competence about which policies would work best for which consumers and about developments in the industry.[105] Courts reduce opportunism by requiring that intermediaries exercise a duty of care as professionals[106] and by binding agents through estoppel if an agent makes a misstatement on which the policyholder reasonably relies to her detriment.[107]

But neither the regulatory nor the liability regime are particularly strong and are unlikely to have their intended effect on the industry. In most jurisdictions, intermediaries have no duty, absent a special relationship, to advise policyholders about whether insurance coverage that is available is adequate or appropriate to their needs; nor are intermediaries required to provide information about alternative policies that might better meet their needs.[108] Further, most jurisdictions make it quite difficult to create a special relationship. For example, in some jurisdictions, it is possible to establish a special relationship through a long-term relationship with the intermediary[109] or when the intermediary specifically agrees to work on particular coverage issues.[110] But a general request for "the best policy" or "full coverage" does not create "a duty to determine the insured's full insurance needs, to advise the insured about coverage, or to use his discretion and expertise to determine what coverage the insured should purchase."[111]

Thus, although regulators and courts have some role in this sphere, it is quite limited.

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[104] *See* Baker & Dellaert, *supra* note 102, at 723–24 ("[T]he prevailing commission-based compensation for intermediaries creates significant conflicts of interests that lead to biased advice."); Schwarcz & Siegelman, *supra* note 100, at 40.

[105] Schwarcz & Siegelman, *supra* note 100, at 40 ("Assuring a minimum bar of competence and trustworthiness among agents is the primary motivation for a host of regulatory requirements and liability rules, including licensing requirements, suitability laws and doctrines such as waiver, estoppel, and the duty to procure coverage.").

[106] JERRY & RICHMOND, *supra* note 55, at 223.

[107] *Id.* at 152.

[108] *See id.* at 224–25 (§ 35[f][2][ii] entitled "Liability of Agents or Brokers to Insured for Failure to Provide Advice or Explanation").

[109] *See id.*

[110] *See id.* at 226 & n.214.

[111] *See, e.g.*, Trotter v. State Farm Mut. Auto. Ins. Co., 377 S.E.2d 343, 347 (S.C. Ct. App. 1988); *see also supra* note 108.

3. Market Conduct

Regulators and courts also oversee insurance marketing and claims handling. These are moments in the insurance relationship where policyholders are particularly vulnerable. Insurance consumers rarely know the exact contours of their policies and even less frequently are able to compare similar policies across insurers. In many instances, policyholders cannot even see their policies before purchasing them. Unscrupulous insurers could take advantage of this information gap with false and misleading advertising. Likewise, policyholders know very little about the companies' claims processes or their rights in that process.[112] Again, insurers can act opportunistically. Insurers may delay paying claims, contest claims knowing that some policyholders will abandon their claims or accept reduced payments, or deny claims altogether to make money on float.[113] Every day that the insurers delay paying out on claims, the insurers earn interest on the premiums the policyholders have paid. These information asymmetries make it difficult for market solutions to solve the inherent problems, thus necessitating regulatory and judicial intervention.

Although there is significant variation across the states, regulators are generally empowered to curb unfair trade practices. The National Association of Insurance Commissioners (NAIC), a deeply influential organization of insurance commissioners from each of the states,[114] has promulgated, and multiple states have adopted, model laws that govern unfair trade practices[115] and unfair settlement practices.[116] Unfair trade practices include false advertising of insurance policies, which is defined as "misrepresent[ing] the benefits, advantages, conditions or terms of any policy."[117] Unfair settlement practices include a failure "in good faith to effectuate prompt, fair and equitable settlement of claims submitted in which liability has become reasonably clear" and "[r]efusing to pay claims without conducting a reasonable investigation."[118] State regulators are empowered in most states to require insurers to report data on claims, rate of payment, and speed of payment. From this, regulators can identify those companies that do not seem to be paying claims at a reasonable

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[112] *See* Jay M. Feinman, *The Regulation of Insurance Claim Practices*, 5 U.C. IRVINE L. REV. 1319, 1321–26 (2015).

[113] *See* JAY M. FEINMAN, DELAY, DENY, DEFEND: WHY INSURANCE COMPANIES DON'T PAY CLAIMS AND WHAT YOU CAN DO ABOUT IT 170 (2010).

[114] *See* Susan Randall, *Insurance Regulation in the United States: Regulatory Federalism and the National Association of Insurance Commissioners*, 26 FLA. ST. U. L. REV. 625, 627–28 (1999).

[115] *See* UNFAIR TRADE PRACTICES ACT (NAT'L ASS'N OF INS. COMM'RS 2004), https://www.naic.org/store/free/MDL-880.pdf [https://perma.cc/CT3R-YPP4].

[116] *See* UNFAIR CLAIMS SETTLEMENT PRACTICES ACT (NAT'L ASS'N OF INS. COMM'RS 1997), https://www.naic.org/store/free/MDL-900.pdf [https://perma.cc/577G-3QLM].

[117] UNFAIR TRADE PRACTICES ACT § 4.A–B, at 800-2 to -3.

[118] UNFAIR CLAIMS SETTLEMENT PRACTICES ACT § 4.D, F, at 900-2.

rate or in a timely manner. Regulators also collect data about consumer complaints and rates of renewal.[119] This data, however, is not made publicly available. State regulators can also bring enforcement actions, but these actions are largely toothless because the standard for finding a violation is too high and the fines are too small to be meaningful.[120]

Courts also help curb opportunism in market conduct settings. First, as described above, courts have several mechanisms to help control potentially false advertising by insurers and intermediaries: policyholders, who rely on false claims by insurers or intermediaries, may have tort claims for breach of duty and insurers may be estopped from denying coverage.[121] On the back end of the relationship, courts regulate insurer claims practices with a variety of liability rules aimed at providing a remedy for failure to pay claims in a reasonable manner.[122] These claims are often difficult to prove and undercompensatory, but may provide some bulwark against the most egregious market behaviors.[123]

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Although this is not a full accounting of the reasons for insurance regulation or the failures of the market, this Part provides some idea of both the hows and the whys of regulation. The problem is that the mechanisms regulators use to protect the market and the values of the insurance system are based on the historical practices of insurers. Using AI and big data, insurers are revolutionizing their business practices—finding new ways to price risks and policies, tailor coverage, offer advice to purchasers, identify fraud, and sequence the payment of claims. These changes throughout the life cycle of insurance have subverted the protections for consumers built into the current regulatory regimes.

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[119] *See* ABRAHAM & SCHWARCZ, *supra* note 24, at 147; Feinman, *supra* note 112, at 1327.

[120] *See* Feinman, *supra* note 112, at 1338–39 (explaining that statutory violations of unfair practices acts are only punishable if they are "regular and repeated practice" or "flagrant and intentional" and that the penalties are too small to "provide a substantial deterrent to insurers with premium income in the tens or hundreds of millions of dollars").

[121] *See supra* notes 106–111 and accompanying text.

[122] *See* Feinman, *supra* note 112, at 1347. As Feinman notes, around a half-dozen states use some version of a reasonableness standard, and a far greater number of states use a variant of the "'fairly debatable' rule: 'To show a claim for bad faith, a plaintiff must show the absence of a reasonable basis for denying benefits of the policy and the defendant's knowledge or reckless disregard of the lack of a reasonable basis for denying the claim.'" *Id.* (quoting Anderson v. Cont'l Ins. Co., 271 N.W.2d 368, 376 (Wis. 1978)).

[123] Proving bad faith in this context is often quite difficult given the fairly debatable rule. *See id.* Moreover, contract damages, which limit consequential damages, are likely to ignore the financial security that insurance is supposed to provide. *See* Jay M. Feinman, *The Law of Insurance Claim Practices: Beyond Bad Faith*, 47 TORT TRIAL & INS. PRAC. L.J. 693, 694–95 (2012).

II. INDIVIDUATED PRICES

Insurers can use AI to tailor prices in two ways. First, AI can help insurers find new correlations to loss that help the insurer sort policyholders into more homogeneous groups. By classifying risks more finely, insurers can better price their products for low- and high-risk policyholders. As with other types of risk classification, pricing with AI raises concerns about burdening vulnerable groups with higher prices, invasions of privacy, and social costs.[124] But the use of AI to price risks puts those concerns in a new light and raises new concerns such as the ownership of data that the insurers use to price risks. Regulators must adapt to continue to protect vulnerable groups, policyholder privacy, and policyholders' interest in their data.

Second, insurers can tailor prices not based on the level of risk that the policyholder represents but based on the individual's willingness to pay. Setting prices in this way ignores traditional prohibitions against "discriminatory" pricing—pricing that requires cross-subsidization from low-risk to high-risk insureds. Regulators must determine whether to continue to pursue this traditional form of regulation. To do so, regulators should consider whether and how this practice is harming consumers. This Part addresses these issues in turn.

A. AI Stretches Consumer Protections in Risk Classification

Insurance prices are based on the risk that an insured will suffer a loss in the policy period and the likely size of that loss. That determination is inherently data-driven. For example, to price a particular applicant's policy, insurers need data on losses in the population at large, on claimants generally, and on the particular applicant.

In traditional statistical analyses of risk, insurers first identify a set of independent variables presumably with the power to predict loss. The insurers can then compare those variables to past loss experiences to set the prices. For example, traditional underwriting of homeowners insurance likely begins with the age of the house, the kind of materials used, the distance from a fire station, the smoking status of the residents, etc., because these variables have been used in the past and shown to correlate to loss.

AI, fueled by big data, provides an opportunity to enhance and refine insurers' underwriting. With AI, insurers can search through more data without the restriction of identifying particular potential correlations to loss ex ante. Instead, the AI could consider vast amounts of data—including things that seemingly should have no correlation to insurable events, like property losses and things such as tweets, likes on Facebook, Google searches, online shopping patterns,

[124] *See supra* notes 45–52 and accompanying text.

etc.—and run an iterative process to identify correlations to loss. When programmed to price risk, the AI will sift through this information, adapting and refining the weight it puts on each factor until it finds new and better ways to score the likelihood that a policyholder will suffer a relevant loss in a particular period. This iterative and somewhat unsupervised process has significant implications for fairness, for privacy, and for corporate control of consumer data.

1. Protecting Vulnerable Groups and the Limits of Risk Classification

The iterative, unsupervised analysis used by AI to price insurance policies may undermine the limited state and federal protections that exist to protect vulnerable groups and suspect classes from higher prices. If AI uses hundreds or thousands of individual data points to set the price, the AI may charge vulnerable groups more for the same coverage, even if data scientists prohibit the use of some variables—for example, race, gender, religion, country of origin, etc. in the pricing algorithm.

Imagine first that there is, in fact, a correlation between a suspect group and loss. Imagine further that state regulators have prohibited the use of the suspect group in risk classification. Even if told not to use a particular set of forbidden variables, the AI might, in the first instance, use obvious proxies for prohibited categories—like zip code and race. This too could presumably be rooted out by expanding the list of prohibited categories from the AI's pricing model. But, even so, the AI might hit upon non-obvious proxies for prohibited categories. In that situation, even if one unpacked the algorithms ex post to determine what variables it used, simply peering through the list would not make clear whether some groups are inadvertently being charged more for insurance. More concernedly, it is likely that no one variable is a proxy for the prohibited category. Instead, it may be that the AI will hit upon a set of variables that correlate with prohibited categories in ways that could be impenetrable.[125] This would result in higher prices for vulnerable groups. Even if these higher prices do not carry the expressive harms of intentional discrimination,[126] they nonetheless may make more expensive ordinary activities like driving, homeownership, and providing security for one's family through life, disability, or health insurance. This raises significant fairness concerns.

As discussed above, there are multiple competing conceptions of fairness in insurance pricing. Fairness might be associated with pricing based on indi-

[125] Although this could be true in traditional statistical risk classification, the risk is higher when insurers use AI because so many more variables are used to price risk. Further, given that insurers will not necessarily disclose the variables that AI relies on to set prices, it is difficult to root out obvious proxies for vulnerable groups like zip codes as a proxy for race.

[126] *See* Swedloff, *supra* note 51, at 363–65.

vidualized risk of loss or associated with a pricing scheme that considers the context and characteristics that make up the individual's risk profile. In different lines of insurance, different notions about what is "fair" might carry the day. Some higher rates on some vulnerable groups may be more tolerable than others. Even without AI complicating the issues and even assuming away discrimination based on animus, some groups will always pay more for the same product than other groups.

For example, older people pay more for life insurance than younger people. Even if this price were based on facially neutral characteristics—that is, even if the price were based on something other than the age of the insured[127]—these higher rates seem normatively defensible. There is little doubt that, on average, older people are more likely to die in the policy period—say the next year—than younger people. Thus, insurers face a higher risk of paying out in the policy period for the elderly than for the young. These higher prices thus seem defensible even though age is not something people can control in light of the strength of the causal story and the role that life insurance plays in the security of younger and older policyholders. Younger policyholders use life insurance to hedge the risk of death and the concomitant loss of earnings. Older policyholders have had more time to save and lost earnings might not be as economically disruptive.

Consider instead homeowners insurance and crime. Property insurers could base rates on crime statistics. People who live in areas with higher crime rates may have to pay more for homeowners insurance than those who live in low-crime areas. This makes some sense statistically. If there is a high risk of loss due to theft or other criminal activity, insurers might feel justified in charging more for the insurance as their risk of paying out on the policy is correspondingly higher.

Now imagine that there is a correlation between crime rates and a protected class—like race, religion, or national origin.[128] The higher rates now create a disparate impact on certain groups. There are strong arguments on both sides about whether these higher rates are normatively defensible. The higher rates might be fair to homeowners in low-crime areas who would otherwise have to subsidize the insurance premiums of those in high-crime areas. Higher rates might also control against adverse selection—to the extent that homeowners insurance is not de facto mandatory—or encourage efforts to mitigate loss, like community policing. On the other hand, homeowners insurance serves important social functions. As with other types of insurance, it creates a sense of

[127] Of course, in the realm of life insurance, insurers explicitly ask the age of applicants, but one could imagine a regime where intentional age discrimination is prohibited and yet, through AI-based risk classification, older applicants are saddled with a higher price.

[128] *See* Selbst, *supra* note 18, at 121.

economic security that might increase policyholder wellbeing, and it provides some financial security for policyholders.[129] Homeowners insurance also lowers the lending rate by securing the primary collateral for the mortgage—the home. Higher rates in this context, even if statistically defensible, look more problematic, because there may be historical and sociological reasons for higher crime in particular areas. Further, insureds who live in high-crime areas may not have the means to move. Under this view, cross-subsidization from low-risk policyholders to high-risk ones is more justified, as the high-risk characteristic may not be deserved. And to the extent that areas of high crime are predominately made up of people of color, there may be a risk that the higher premiums reinforce negative stereotypes and impose dignitary harms.[130]

Next, consider health insurance. In a world without the ACA controlling rates in the non-employer market, prices for women in their twenties and thirties might spike. Pregnancy and childbirth are high-cost events that increase the insurers' risk of paying out. But charging all of that increased risk of health care spending to women alone seems unreasonable because both men and women are part of the child-making process (even in the case of assisted reproduction), and because society seems to put a significant value on children (if not child-rearing).

These complexities suggest that there are not easy heuristics for regulators. Deciding how and when to regulate insurance pricing will require significant and nuanced thinking. As a final step, regulators should focus on the disparate impact that facially neutral rates have on vulnerable groups instead of focusing on prohibiting intentional discrimination.[131] But, in doing so, regulators must recognize that this is a complicated issue. Whether disparate impact matters depends on a careful consideration of factors that roughly cluster around arguments based on efficiency and fairness. This observation is consistent with the findings from Ronen Avraham, Kyle Logue, and Daniel Schwarcz.[132] They show that states have different approaches to banning intentional discrimination across lines of insurance and jurisdictions.[133] In part, these inconsistencies might be based on lobbying from insurers or low-risk groups of consumers. But these differences might also reflect the reasoned judgment of policymakers and real concerns about setting rates that are fair to low-risk policyholders, protect against adverse selection, and help mitigate moral hazard.

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[129] *See* Kimball, *supra* note 30, at 478–79.

[130] *See* Swedloff, *supra* note 51, at 349.

[131] *See generally* Barocas & Selbst, *supra* note 19 (discussing the disparate impact that big data can create).

[132] *See* Avraham et al., *supra* note 45.

[133] *See id.* at 241–44.

Whether this potential disparate impact matters depends on the line of insurance, the potential causal story, and the social importance of the line of insurance. These considerations must come to the fore in the age of AI to restore the protections promised by the state. To begin this conversation, regulators must enable insurers to gather relevant data about pricing and race. They should then make that information available to the public so that sophisticated researchers can evaluate whether vulnerable groups are paying more for certain lines of insurance. This will not answer the question about whether the higher prices are justifiable, but it will begin the complicated conversations that are necessary to answer that question.

2. Privacy

Scholars and advocates have long argued that there should be some categories of personal information beyond the reach of insurers. According to this argument, categories like genetic information, sexual orientation, or HIV status are so closely held and so intimate that states should bar insurers from using the information in setting rates or deciding whether to issue a policy.[134] And, some states have enacted modest privacy protections in response, such as prohibiting insurers from asking applicants about certain personal, private characteristics.

The privacy debates tend to mirror the concerns raised in any debate about risk classification, raising issues of both efficiency and fairness. If insurers can access the information, they can price policies more precisely. If not, insurers will charge everyone a higher premium, because some unidentifiable individuals in the population have a higher risk of loss. This raises concerns about adverse selection—the fear that better-risk policyholders will drop out of the pool in light of the higher prices. But, requiring disclosure of certain information could mean that some people avoid acquiring the private information.

For example, if insurers are not permitted to consider genetic information in pricing life insurance, they will have to raise the rates for all policyholders to cover the cost of paying out for individuals who have predictably shorter life expectancies as a result of known genetic disorders. This might make life insurance too expensive for those without the predisposition to disease, leading to adverse selection.[135] On the other hand, if insurers consider such information in risk classification, some people might forego getting genetic testing

[134] *See* Anya E.R. Prince, *Insurance Risk Classification in an Era of Genomics: Is a Rational Discrimination Policy Rational?*, 96 NEB. L. REV. 624, 661–63 (2018); Sandra Elizabeth Stone, Note, *HIV Testing and Insurance Applicants: Exploring Constitutional Alternatives to Statutory Protections*, 19 HASTINGS CONST. L.Q. 1163, 1164 (1992).

[135] *See* Siegelman, *supra* note 9, at 1223–24.

and thus miss out on timely medical interventions.[136] Additionally, privacy scholars argue that some set of private, intimate information should simply be beyond the scope of corporate view.[137]

The advent of AI does not change these baseline arguments, but AI might allow insurers a way around existing state privacy regulations. Insurers have typically relied primarily on insurance applications as a method of gathering data on applicants. To the extent they wanted to do more, they were likely limited by cost—background checks and other investigations are expensive. With AI, it may be easier to learn more about an applicant at lower costs.

For example, insurers could buy or harvest data that could include otherwise private information. Data brokers can obtain data from a wide range of places, including health records; online transactions; or other activities of daily living, such as meta-data from email and texts, search queries from a myriad of sites like Google and YouTube, social media interactions, cell site location information, books and articles kept and read on cloud-based servers, and information from telematics devices in cars.[138] Further, AI might be able to predict individual characteristics even if insurers cannot ask about them. For example, buying a book on a genetic disorder or liking a disease foundation's Facebook page might reveal something about an individual's pre-disposition to disease.[139] Likewise, social media habits could reveal something about a person's sexual orientation or HIV status. Also, given the ease with which companies gather data, they may be able use pieces of information that regulators did not consider as they set their baseline for privacy. Policyholder lives are thus more exposed to an underwriting eye.

This suggests that AI could allow insurers to intentionally or unintentionally make an end-run around privacy protections. Regulators must consider whether and how much to limit these practices. As with concerns about burdens on vulnerable groups, regulators may need to find ways to ensure that the protections exist against unintentional invasions.

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[136] *See* Tabarrok, *supra* note 46, at 80.

[137] *See* Prince, *supra* note 134, at 625–26; Stone, *supra* note 134, at 1177–78.

[138] Alessandro Acquisti et al., *Privacy and Human Behavior in the Age of Information*, 347 SCI. MAG. 509, 509 (2015); Tene & Polonetsky, *supra* note 6, at 240.

[139] Kate Crawford & Jason Schultz, *Big Data and Due Process: Toward a Framework to Redress Predictive Privacy Harms*, 55 B.C. L. REV. 93, 97–98 (2014). In one apocryphal story, Target correctly predicted which of their customers were pregnant by their purchasing habits. *Id.* at 94–95, 98–99. Although this story was proven false, one could imagine a similar set of privacy concerns, given the amount of data insurers have and can purchase about their customers. *Id.* at 94–95, 98–99; *see* Colin Fraser, *Target Didn't Figure Out a Teenager Was Pregnant Before Her Father Did, and That One Article That Said They Did Was Silly and Bad*, MEDIUM (Jan. 3, 2020), https://medium.com/@colin.fraser/target-didnt-figure-out-a-teen-girl-was-pregnant-before-her-father-did-a6be13b973a5 [https://perma.cc/XE5S-87MA].

3. Ownership of Data

Increasingly insurers are relying on devices that track policyholder behavior to price risk. For example, auto insurers now routinely ask policyholders to put electronic devices called telematics devices into their cars to monitor their driving patterns.[140] With these devices, insurers can better price risks by directly measuring their policyholders' driving habits, including distance driven, how fast they drive, how hard they brake, and times of day they are in the car.[141] It is not hard, given the burgeoning interconnectivity of mundane, household objects like dishwashers, refrigerators, heating and cooling systems, and washing machines, to imagine that insurers could expand their data-gathering experiment into new lines. An insurer could find ways to harness information from these household objects to assess potential losses in a house. Similarly, a life insurer could use information gathered from smartphones, wearable health devices, or credit card statements to assess how often one exercises, goes to the gym, or purchases healthy foods to assess life expectancy.[142]

There are likely coming battles about who owns the data contained on these devices. In these examples, the policyholder is generating the data kept inside the device and policyholders might want some sort of control over what happens to that data. For example, if a good driver wants to switch carriers, can she take the information from her telematics device to the new carrier and demand a lower rate? Can a bad driver prohibit his current carrier from sharing

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[140] Allstate explains how this works on its website: "Telematics is a method used to collect information about your driving habits. . . . [I]t may record the number of miles you drive, your speed, and how quickly you brake. These systems may also analyze the time of day when you drive." *How Telematics May Affect Your Car Insurance*, ALLSTATE, https://www.allstate.com/tr/car-insurance/telematics-device.aspx [https://perma.cc/35SQ-PG6E]. At least one insurer requires its insureds to use telematics devices—Metromile explicitly charges users for auto insurance by the number of miles driven. *See* METROMILE, https://www.metromile.com [https://perma.cc/EC8J-GTUA]. To capture that number based on something other than self-reports, the insurer requires policyholders to plug in, and keep continually plugged in, the "Metromile Pulse," which is a telematics device that "communicates back to Metromile a variety of information about your vehicle and your trips, including miles driven, speed, heading, acceleration, deceleration, altitude, periodic odometer readings, collision and impact, location information, and any information derived from the information." *Terms and Conditions for Pulse Device*, METROMILE, https://www.metromile.com/terms-conditions-pulse-device/ [https://perma.cc/3PB4-XUZQ].

[141] Drivers who break harder, drive faster, drive during particular times of day, and drive more miles are more likely to get into accidents. Those who do not are less of a risk and can be charged less for coverage.

[142] For example, an electric toothbrush company recently bought a dental insurance company. *See* Angelica LaVito, *A Toothbrush Start-Up Buys an Insurer so It Can Cover Your Dental Visits, Too*, CNBC (May 16, 2018), https://www.cnbc.com/2018/05/15/quip-toothbrush-startup-acquires-afora-dental-insurance-startup.html [https://perma.cc/VGD9-ME9F]. It is not hard to see the linkage between information an electric toothbrush might have about its user and the risk of loss under a dental policy.

that information with a new insurer?[143] If insurers own the data, it may make it more difficult to switch carriers, which raises additional concerns that insurers will charge their policyholders monopoly rates because the best insureds would have a hard time getting better rates without their data.

This may seem to be a minor concern, but as more companies rely on data that the policyholder generates to price risk, the concern is growing. And, regulators should begin to consider the implications of user-generated data.

B. Price Discrimination

Insurers are not just tailoring prices more finely to match a policyholder's risk profile; they are using AI to match prices to a consumer's willingness to pay.[144] This means that policyholders that represent the same risk of loss could pay different prices for the same coverage.[145] This price discrimination,[146] euphemistically called price-optimization by insurers, intersects with regulations protecting policyholders from excessive and discriminatory pricing, ensuring that low-risk policyholders do not subsidize high-risk policyholders and thus pay too much for coverage.[147]

Price discrimination is being debated in a number of fora. The NAIC is actively considering whether and how to provide guidance on the practice of price discrimination.[148] A number of states have banned or limited price discrimina-

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[143] This might create something akin to a market for lemons. Carriers would assume that new applicants who do not have information from a telematics device are all bad risks because they cannot differentiate between those who never used telematics devices and those who have bad driving habits.

[144] According to an industry survey in 2014 by Willis Towers Watson, about one-third of auto insurance carriers are using some form of price discrimination. *See* Towers Watson, *Insurers Say Predictive Modeling Is Boosting Their Profits*, KOREA BIZWIRE (Feb. 9, 2015), http://koreabizwire.com/insurers-say-predictive-modeling-is-boosting-their-profits/29810 [https://perma.cc/DEV2-REX7] ("Insurers say price integration (overlay of customer behavior and loss cost models in setting prices) is one area where progress has been slow. Two-thirds aren't using price integration for any products, while most have not yet moved on to price optimization for products."). This number would likely be higher if it were not for the current debate and legal challenges to price optimization.

[145] Andrea Wells, *The Price of Price Optimization*, INS. J. (Oct. 19, 2015), https://www.insurancejournal.com/magazines/mag-coverstory/2015/10/19/384738.htm [https://perma.cc/28JV-A8SR].

[146] Price discrimination exists when the prices consumers pay vary in ways that cannot be explained by differences in the marginal cost of the product or service. In the context of insurance, this means pricing a policy on something other than the policyholder's features and experiences that correlate with a risk of loss. *See* Stole, *supra* note 72, at 2224. Price discrimination exploits the elasticity of demand by charging a higher price to consumers who are willing and able to pay more for a particular line of insurance. *See id.*

[147] *See supra* notes 64–67 and accompanying text.

[148] *See generally* CAS. ACTUARIAL & STATISTICAL (C) TASK FORCE, NAT'L ASS'N OF INS. COMM'RS, PRICE OPTIMIZATION WHITE PAPER (2015), https://www.naic.org/documents/committees_c_catf_related_price_optimization_white_paper.pdf [https://perma.cc/ZX5M-JCUR] (discussing the pros and cons of using price optimization and options for state regulatory responses to its uses).

tion in insurance[149] and there are active lawsuits about whether insurers should be allowed to use price discrimination in setting rates.[150] This fight is about both the role regulators have in setting rates for insurance generally and the propriety of AI-enhanced bespoke pricing.

This Section first discusses how AI enhances the precision of price discrimination.[151] It then considers whether regulators should care, especially considering recent calls to eliminate traditional rate regulation in competitive markets.[152]

1. Insurers and Price Discrimination

Insurers have long varied prices to some extent within risk categories.[153] For example, insurers regularly give multi-line discounts (discounts for policyholders that purchase more than one line of insurance from the insurer),[154] provide discounts for young drivers to keep their parents as customers,[155] and provide short-term price cuts to induce new policyholders to become customers.[156] In each of these examples, insurers price their products on something

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[149] *See* Susan Kearney, *Price Optimization: Big Data Boon or Unfair Practice? You Decide*, PROP. CASUALTY 360 (Feb. 1, 2017), https://www.propertycasualty360.com/2017/02/01/price-optimization-big-data-boon-or-unfair-practic/ [https://perma.cc/32W9-J4E6] ("As of May 2016, notices that limit or ban price optimization in the insurance sector have been issued by Washington, D.C. and 18 states: Alaska, California, Colorado, Connecticut, Delaware, Florida, Indiana, Maine, Maryland, Minnesota, Missouri, Montana, Ohio, Pennsylvania, Rhode Island, Vermont, Virginia and Washington."); *see also* Jeff Blyskal, *Price Optimization Helps Car Insurers Figure Out Whether You're a 'Schmo*,*'* CONSUMER REP. (Sept. 3, 2015), https://www.consumerreports.org/cro/carinsurance/price-optimization-car-insurance-schmo [https://perma.cc/LT8W-DSVS] (listing nine states plus D.C. as limiting or banning price optimization).

[150] *See generally* Kearney, *supra* note 149 (discussing two lawsuits challenging insurers' use of price optimization).

[151] *See infra* Part II.B.1.

[152] *See infra* Part II.B.2.

[153] This is not unique to insurance. In a variety of contexts, consumers pay different prices for the same product: hotels often charge business travelers more for rooms than they charge other travelers; airlines vary the price of a ticket based on the day of purchase, with prices often fluctuating by hundreds of dollars; and cable companies regularly provide discounts to customers who complain about the price.

[154] *See, e.g.*, *Multiple Policy Discounts*, ALLSTATE, https://www.allstate.com/auto-insurance/auto-life-discounts.aspx [https://perma.cc/7FFC-7QEX]; *Multi-Policy Discount*, NATIONWIDE, https://www.nationwide.com/personal/insurance/auto/discounts/types/multi-policy [https://perma.cc/CRQ3-69C5].

[155] Robert P. Hartwig, President, Ins. Info. Inst., Testimony at the National Conference of Insurance Legislators: Price Optimization in Auto Insurance Markets: Actuarial, Economic and Regulatory Considerations 6 (July 15, 2015), https://www.iii.org/sites/default/files/docs/pdf/ncoiltestimony-071715.pdf [https://perma.cc/M4WU-H42R] ("Many companies . . . know that the decision to renew a policy lies not with the teen driver but with the parent. They do not want to lose the parent as a customer, so the youthful driver pays less than he or she should in a strict actuarial-based pricing world.").

[156] *See, e.g.*, Kearney, *supra* note 149.

other than the risk that the policyholder presents.[157] This type of price discrimination is a relatively crude tool. With AI leading the way, however, sellers can now pinpoint their pricing on a truly individual level.[158]

In other markets, sellers use a variety of data to set prices, "including consumers' location, the time of day, the characteristics of their computer (for example, operating system and browser)," purchasing history, and likelihood of comparison shopping.[159] For example, "Uber calculates riders' propensity for paying a higher price for a particular route at a certain time of day .... [S]omeone traveling from a wealthy neighborhood to another tony spot might be asked to pay more than another person heading to a poorer part of town, even if demand, traffic and distance are the same."[160] Staples offered discounts based on whether rival stores are within twenty miles of its customers' locations.[161] In addition, airlines regularly charge higher prices to those who have already searched for flights based on computer cookies.[162] One relatively recent study found evidence of price discrimination in four major retailers and five travel sites, including "cases where sites altered prices by hundreds of dollars."[163]

Insurers can likewise use artificial intelligence to identify consumers' price sensitivity and willingness-to-pay. In fact, the long-term nature of insurance contracts makes it easy for insurers to gather data on purchasing habits and vary prices accordingly. Insurers often have years and years of data about

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[157] To some extent, insurers may justify the difference between a policyholder's risk profile and the price charged by administrative cost savings, minimizing coverage gaps, or additional data. When individual policyholders purchase several lines from the same carrier, the insurer might save money because it has lower administrative costs on each individual policyholder. These savings may come in terms of data collection, processing, and billing because the insurer knows that it will not have to fight about coverage gaps in a particular policy given that the policyholder has other policies in place that will cover the loss. The price discrimination with which this Article is concerned is pricing that is based neither on the riskiness of the policyholder nor the administrative cost savings associated with the individual policyholder. In this context, price discrimination is pricing that takes advantage of an insurer's monopolistic power.

[158] *See* Bar-Gill, *supra* note 66, at 221.

[159] *Id.* at 225–26; *see also* Akiva A. Miller, *What Do We Worry About When We Worry About Price Discrimination? The Law and Ethics of Using Personal Information for Pricing*, 19 J. TECH L. & POL'Y 41, 48–52 (2014).

[160] Eric Newcomer, *Uber Starts Charging What It Thinks You're Willing to Pay*, BLOOMBERG (May 19, 2017), https://bloom.bg/2qBCuyp [https://perma.cc/JCU5-LCXZ].

[161] Jennifer Valentino-DeVries et al., *Websites Vary Prices, Deals Based on Users' Information*, WALL ST. J. (Dec. 24, 2012), https://www.wsj.com/articles/SB10001424127887323777204578189391813881534 [https://perma.cc/6Q6C-6L2P].

[162] *See* Arwa Mahdawi, Opinion, *Cookie Monsters: Why Your Browsing History Could Mean Rip-off Prices*, THE GUARDIAN (Dec. 6, 2016), https://www.theguardian.com/commentisfree/2016/dec/06/cookie-monsters-why-your-browsing-history-could-mean-rip-off-prices [https://perma.cc/K36H-4VVM].

[163] Aniko Hannak et al., *Measuring Price Discrimination and Steering on E-Commerce Web Sites*, 2014 ASS'N FOR COMPUTING MACHINERY INTERNET MEASUREMENT CONF. PROC. 305, 317, https://dl.acm.org/doi/pdf/10.1145/2663716.2663744 [https://perma.cc/4R2V-KQ74].

the policyholder's premium payments and complaints (or lack thereof) about prices. If a consumer has searched for insurance prices or is known to comparison shop, insurers can lower prices; conversely, insurers can charge more to policyholders who have stayed with the same carrier for a long time without complaining about price.[164]

Imagine two drivers, A and B, each of whom represents the same risk of a car accident in the next year, who are both up for renewal of their insurance policy. Driver A has been a customer for ten years and has never called the company or complained about the price he pays. Driver B has been a customer for the same ten years but is known to be an active comparison shopper. Driver B has called the carrier multiple times to complain about prices and has threatened to switch carriers over the years. An insurer using price discrimination might charge Driver B less for coverage.[165] According to a report by National Public Radio, this can result in as much as a thirty-percent change in the prices charged to policyholders.[166] Whether regulators should limit or ban this practice depends on whether and how price discrimination harms consumers.

2. Price Discrimination and Regulatory Puzzles

Insurers argue that they have always been given some flexibility in pricing for marketing and to provide continuity of coverage for their customers.[167] The Insurance Information Institute (III), a large insurance trade association, argues that price discrimination as deployed by the insurance industry is just a natural extension of earlier marketing campaigns, like providing lower rates to young drivers or new policyholders.[168] And, according to the III, given that most personal lines of insurance, like homeowners and auto insurance, are competitive markets, price discrimination should not hurt consumers.[169]

Consumer protection advocates, on the other hand, point out that the essence of price discrimination runs afoul of current regulatory regimes.[170] If

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[164] *See, e.g.*, Kearney, *supra* note 149.

[165] *See, e.g.*, Blyskal, *supra* note 149; Tracy Samilton, *Being a Loyal Auto Insurance Customer Can Cost You*, NPR (May 8, 2015), https://www.npr.org/2015/05/08/403598235/being-a-loyal-auto-insurance-customer-can-cost-you [https://perma.cc/UXC4-BXVF].

[166] Samilton, *supra* note 165 ("This can mean as much as a 30 percent rate difference between two drivers with the same risks. Only one's a shopper and one's not.").

[167] *See, e.g.*, Hartwig, *supra* note 155, at 6.

[168] *Id.*

[169] *Id.* at 8–10.

[170] *See, e.g.*, Birny Birnbaum, Ctr. for Econ. Justice, Consumer Perspectives on Risk Classification: Big Data and Price Optimization, Presentation at the Casualty Actuarial Society's Ratemaking and Product Management Seminar (Mar. 2015) (slides accompanying Mr. Birnbaum's presentation), https://www.casact.org/education/rpm/2015/handouts/Paper_4067_handout_2510_0.pdf [https://perma.cc/H568-ASYL].

price discrimination requires pricing based on something other than the riskiness of an individual and the administrative costs of providing insurance, then the rate is by definition excessive and discriminatory. It is excessive because it does not reflect the insurer's expected costs, and it is discriminatory because, if one policyholder is paying less than an actuarially fair rate, another must be paying more to provide the necessary subsidy.[171]

These arguments present significant puzzles for regulators. Insurers claim that the marketplaces are competitive and therefore there is no need for any rate regulation. This is puzzling because price discrimination should not exist in a competitive market;[172] consumers who are charged more should simply switch to a competitor's lower-priced product.[173] Conversely, consumer advocates argue that regulators should monitor and eliminate price discrimination.[174] This too requires thought. Why should insurance regulators worry about price discrimination in insurance markets while the practice is largely ignored in other markets (like cable services, cellular data plans, and hotel and airline prices)?

The answer to these puzzles may lie in the role insurance plays in society, the nature of insurance contracts, behavioral barriers to switching coverage, and the amount of data that insurers have about consumers. As described above, insurance plays important roles in society. Insurance is all but mandatory for home ownership and driving. Moreover, insurance does not just redound to the benefit of the policyholder. Homeowners insurance secures the policyholder, but more importantly provides security for the mortgagor, reducing the cost of lending. Auto insurance provides financial protection to the policyholder, but is also an easily-recoverable asset for victims of accidents. Life insurance is not for the benefit of the policyholder, it provides security for the policyholder's beneficiaries. In short, insurance is distinct from cable television and cellular data because of the role it plays in society.

Even if there are numerous insurers in the marketplace and cheaper options available, many policyholders stick with their insurers year after year. For example, according to a survey conducted by Consumer Reports, only nine percent of homeowners changed insurers in the preceding three years.[175] This suggests that, despite competitive markets, there may be behavioral barriers to

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[171] *See supra* notes 64–65 and accompanying text (discussing excessive and discriminatory rates).

[172] *See* Stole, *supra* note 72, at 2224.

[173] *See* Samilton, *supra* note 165 ("If an individual is unhappy with their insurer for any reason, they should shop.").

[174] *See* Max N. Helveston, *Consumer Protection in the Age of Big Data*, 93 WASH. U. L. REV. 859, 880 (2016).

[175] Jeff Blyskal, *What You Don't Know About Homeowners Insurance Could Cost You*, CONSUMER REP. (June 28, 2017), https://www.consumerreports.org/homeowners-insurance/what-you-dont-know-about-homeowners-insurance-could-cost-you/ [https://perma.cc/P75S-PQWU].

switching, including anxiety about long-term decision making and beliefs about the cost of investigating new carriers and switching from one to another.

Further, price discrimination allows insurers to take the consumer surplus—the difference between the amount a consumer is willing to pay and the amount the insurer would charge in a competitive market.[176] In this context, if consumers prefer to stay with their carrier because they really value the particular insurer more than competitive prices, or because they view the cost of switching as too high, then price discrimination is not inefficient. But it does represent a significant transfer of wealth from consumer to producer.[177] These fears increase when insurers use AI to price discriminate because AI provides the potential for a more individually calibrated price discrimination. Insurers have long-term information about each policyholder from the relationship they have built over the period of coverage. Insurers likely know and can predict how price sensitive a particular policyholder is because they know whether and how often a policyholder has switched carriers in the past, and whether and how often a given policyholder has complained about rates. With this increased ability to individuate, insurers can keep more of the consumer surplus.

Again, these are real problems in other consumer markets, which are not regulated. Regulators should be hesitant to continue regulating excessive and discriminatory rates because it is what they have done for decades. There might, however, be some continued justification for banning price discrimination. Although this newfound, more-precise price discrimination is part of a long tradition of rates that are not strictly based on a policyholder's riskiness, AI-driven price discrimination aided by the reams of data gathered by carriers is a significant refinement of past crude practices. It is not just marketing to new consumers or keeping parents happy as teen drivers are added to auto coverage. Insurers can individuate prices to such an extent that they capture most of the consumer surplus. This harm suggests the kind of anti-competitive behavior that rate regulation was initially meant to curtail.

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[176] *See* Bar-Gill, *supra* note 66, at 220. In a competitive market, some buyers are able to purchase a good for less than they were willing to pay. This creates a consumer surplus that the consumers keep. When firms price discriminate with the kind of precision offered by AI, the firm can charge each buyer exactly what she is willing to pay. In this scenario, the seller keeps the surplus of those who would have paid less than they were willing to pay at competitive prices. *See id.*

[177] If price discrimination simply takes advantage of consumer preferences, then the harms are not inefficient. Where, however, price-discriminating sellers also drive up demand for a good, through, for example, targeted ads, then it is inefficient. The increased demand hurts efficiency by creating excess demand for the good. *See id.* at 241 ("Consumers are hurt more because now they give up surplus that they do not have—perceived surplus—and thus end up with a loss."). Despite omnipresent insurance ads, it is unclear whether insurers are actually driving up demand for their goods. As discussed above, auto and homeowners insurance (the most prevalent ads) are near mandatory. Therefore, it is not clear that there would be the kind of shift in demand Bar-Gill discusses as creating inefficiencies.

III. INDIVIDUATED POLICIES

Insurance startups are considering ways to customize policies and coverages to individual policyholders. For example, Sherpa, a British company, promises to sell new insurance policies tailored to each policyholder's individual needs with coverages that react dynamically to different life activities.[178] Although these promises have not yet been realized, Sherpa is a harbinger of future AI-based insurance. This Article uses Sherpa's promises as a case study and a warning for regulators to get out in front of challenges for the regulation of coverage and forms that have yet to fully materialize.

Sherpa eschews "[o]ff the shelf insurance policies" in favor of "[t]ailored protection around you and your lifestyle."[179] It touts an artificial intelligence, called "The Brain," that "evaluates you on a human level, understands your risks, your lifestyle, and your requirements, and recommends you the right amount of protection."[180] The founder of the company, Chris Kaye, explains that Sherpa provides "a single underwriting process that treats [customers] like a human being rather than a statistic, and the ability to get covered at the click of a button. No more insurance companies. Effortless, personalised insurance."[181] Sherpa does so, according to Kaye, by using "a totally new way of underwriting (underwriting a person holistically rather than as a series of products)."[182]

Sherpa further promises that it will soon be able to gather and use data from a policyholder's smartphone to turn coverage on and off dynamically as needed. This futuristic, dynamic coverage suggests fully customizable terms that adapt to a policyholder's needs in real-time and over time. In theory, this could save policyholders money and cover more risks. Auto insurance could be individually keyed to the times when a policyholder drives, turning coverage on only when the policyholder actually gets in a car.[183] It could keep certain coverages in reserve, like travel insurance, that could automatically kick in when the policyholder starts a vacation. In theory, this could lower the price on some coverages by turning them off when unused. It could also provide more coverage by allowing policyholders to pre-commit to certain types of coverage

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[178] Chris Kaye, *Subscribe to a New Type of Insurance*, THE TELEGRAPH (Feb. 22, 2019), https://www.telegraph.co.uk/business/business-reporter/subscription-insurance/ [https://perma.cc/LGZ5-CEGY]; Ewan MacLeod, *Chris Kaye of Sherpa*, FINTECH PROFILE (May 24, 2017), http://fintechprofile.com/2017/05/24/sherpa/ [https://perma.cc/ANG8-Y2RA]; SHERPA, https://www.meetsherpa.com/ [https://perma.cc/U2M7-BLSA].

[179] SHERPA, *supra* note 178.

[180] *The Brain: ~~Artificial~~ Intelligence*, SHERPA, https://www.meetsherpa.com/brain [https://perma.cc/PHT7-6MZ4].

[181] MacLeod, *supra* note 178.

[182] *Id.*

[183] Auto insurers already price insurance based on an estimate of the frequency and distance policyholders drive, but this would allow for additional precision.

that they might not otherwise purchase, knowing that it will only kick in when needed, or buy a greater level of coverage because they are saving money elsewhere.

Of course, not all of these claims should be taken at face value. This is as much a marketing plan as a business model at this point. For example, Sherpa is not actually creating new types of coverage. In fact, Sherpa is not even an insurer. It is an insurance intermediary, a company that sells insurance provided by another company. Sherpa's business model is to act as a wallet for its customers, holding several different types of coverage—homeowners, life, auto, disability—in one account so that consumers have one point of access for their insurance needs.[184] The underwriting might inform what coverages to purchase, but those coverages seem to be from traditional insurers. Sherpa charges its customers a monthly fee to have the Sherpa service, rather than take commissions on the policies they sell.[185] Further, at this point, Sherpa does not have the ability to turn coverages on and off in a dynamic manner. Customers may have some ability to modify coverages, but it is neither proactive nor automatic.

That said, even if Sherpa is currently only offering a new way to purchase more traditional coverages, it could be a sign of things to come. Individualized and dynamic insurance threatens the consumer protections built into form regulation. Traditional policy review, although limited in scope, protects consumers in important ways. First, form regulation ensures that certain coverages are built into the policies.[186] If start-ups are able to avoid form review by tailoring policies individually, they could leave out these promised protections in favor of cost savings. Second, standardized coverages are well-known to courts. Dynamic policies might have new policy language that will be interpreted more narrowly in litigation. Third, form regulation creates some standardization.[187] Although not complete, standardization makes it easier for consumers to compare complex insurance products. If policies are truly individuated, consumers will have a very difficult time comparing coverages and prices.

The market is unlikely to sort this problem efficiently. In addition to the biases and heuristics that make it difficult to purchase the correct coverage,[188] the time lag between purchase and loss often means that there is no immediate feedback about the quality of the insurance product purchased. If this is for something small, like bicycle theft coverage or extended warranties on durable

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[184] Kaye, *supra* note 178.

[185] *Id.* (stating in a Sherpa ad that "Sherpa has launched the first subscription insurance business").

[186] *See supra* Part II.B.1.

[187] *But see* Schwarcz, *supra* note 100.

[188] *See supra* notes 82–83 and accompanying text.

goods, regulators might have little incentive to investigate.[189] But policies that ostensibly cover homes, lives, and driving are big-ticket items. If this coverage is less than complete because some AI decided to narrow or eliminate coverage, regulators will have to step into the breach. In doing so, regulators will have to build capacity to evaluate the types of insurance that should be sold, the types of coverages offered, and the algorithm that matches individuals to a particular set of policy options.

IV. AI IN THE MARKETPLACE

Insurers are also using AI to help consumers pick policies and to identify consumer fraud. In the purchasing process, AI replaces human agents and brokers to help consumers choose carriers or choose among policy options. If designed well, these bots could eliminate some of the agency costs associated with insurance intermediaries. But, as with other issues in the realm of insurance and AI, these bots might mean new risks and new responsibilities for regulators.[190]

Insurers are also using AI to help root out fraud in the application and claims processes. AI can be used on the front end of the insurance relationship to analyze the statements that policyholders make and help determine the probability that statements in the application are misleading, and are therefore leading insurers to misprice policies. At the back end, in the claims process, AI can be used to determine which claims should be paid first and which should be investigated further for fraud. The concern in this context is that insurers will delay or deny payments in a way that inappropriately burdens policyholders. Regulators should shift some of their attention from their traditional mandates to address the new concerns raised by AI.[191]

A. Robo-Advisers

A number of insurers and intermediaries claim to be using AI to help consumers select among insurers and policy options.[192] Lemonade, for example, which provides homeowners insurance, advertises that "Maya, our charming

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[189] *See generally* Tom Baker & Peter Siegelman, *"You Want Insurance with That?" Using Behavioral Economics to Protect Consumers from Add-on Insurance Products*, 20 CONN. INS. L.J. 1 (2013).

[190] *See infra* Part IV.A.

[191] *See infra* Part IV.B.

[192] In fact, this practice is so prevalent that one online insurance company advertises that it does not use AI: "Bots are nice and all, but sometimes you want to talk to a real live human. Sure, you can message us, but we understand it's nice to pick up the phone and talk to someone. We have agents available seven days a week for your convenience." EFFECTIVE COVERAGE, https://www.effectivecoverage.com [https://perma.cc/WC7A-7C5A].

artificial intelligence bot, will craft the perfect insurance for you."[193] Clearcover, an auto insurance startup in California, announced its launch with a blog post claiming that it was going to lower costs for its customers by using "smart technology like artificial intelligence to provide clear, actionable options so you're empowered to make the right coverage choices."[194] AI in this domain is replacing the role formerly filled by human insurance advisors—agents and brokers. The AI helps consumers select among a menu of potential options to find the policy that best fits the consumer's needs. Having AI replace humans makes some sense in this context given that "even simple algorithms often do better than 'experts' at making predictions across a wide variety of fields."[195]

These companies, and many others, are deploying AI in two different stages. First, AI determines what combination of policy options best matches with particular types of policyholders. At this stage, the AI sifts through data to identify categories of policyholders; identifies the likely risk of loss, types of loss, and amount of loss for each particular category; and then matches that category to a particular set of policy options that best meets the category's coverage needs. As in other areas discussed above, AI can identify the particular coverages or coverage amounts that would minimize the financial exposure for each category of policyholder. At a second stage, the AI matches the particular applicant to the categories of policyholders identified in the first stage.[196] This second stage is a less complex matching problem, which simply finds the appropriate correlations between the particular policyholder and the broad categories created in stage one. As a simple example, at the first stage, an AI might determine that high-net-worth individuals with high risk aversion (Category A) might need a coverage of type X and amount Y. At the second stage, some simple algorithm only has to determine whether the particular applicant is wealthy enough and has enough risk aversion to be in Category A and then suggest coverage X in amount Y.

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[193] LEMONADE, https://www.lemonade.com/ [https://perma.cc/66JB-T6U6].

[194] *See* Kyle Nakatsuji, *Hello, Californians*, MEDIUM (Feb. 13, 2018), https://medium.com/@kylenakatsuji/clearcovercarinsurancecalifornia-4e0a1dd716c4 [https://perma.cc/ZNJ4-4BEE].

[195] Schwarcz & Siegelman, *supra* note 100, at 64.

[196] Most bots advertised by companies today only use the second step, a bot that performs a simple matching algorithm. This use is more evolution than disruption by AI. Online insurers, like Esurance, which began offering online insurance in 1999, have long offered some version of robo-advice, using algorithms to make policy suggestions to consumers. *See Coverage Counselor*, ESURANCE, https://www.esurance.com/coverage-counselor [https://perma.cc/5X68-F2XH]. Companies like Esurance are building on older hybrid practices, where humans implement a largely automated process. In this hybrid system, human intermediaries lead potential consumers through a series of questions guided by algorithms on their computers. The answers to these questions lead the human operators down different pathways and to different outcomes. The human suggests the policy choices, but those choices are actually generated by some algorithm designed to provide choice architecture. *See* Baker & Dellaert, *supra* note 102, at 720.

There is currently no regulatory oversight of insurance robo-advisors. As described above, most regulation of human intermediaries is in the form of education, licensing, and weak liability rules.[197] The licensing and continuing education requirements are supposed to ensure that intermediaries have a minimum level of competence about which policies would work best for which consumers and about developments in the industry.[198] There is no analogous requirement for robo-advisors. This means that no one is monitoring whether an AI provides good advice in the first instance, and whether the advice is updated as policies, liability, and the regulatory context change.

Nor are liability rules likely to provide any real oversight. As described above, absent special circumstances, intermediaries generally have no duty to determine the policyholders' needs or determine the coverage the policyholder should purchase.[199] Importantly, advertising that the AI will find the "best" or "full" coverage for applicants will not create that relationship.[200] Insurers and intermediaries deploying AI and robo-advisers will likely skirt the line in advertising their services and engineer the interface with the applicant in such a way that they do not create a special relationship with the consumer. This is made more problematic by the social meaning often placed on AI, where people seem to think that computers can solve any problem.[201] Thus, although consumers may believe that they are getting the kind of specialized advice that creates a special relationship, insurers and intermediaries—which are in the best position to know the limit of the law—will likely design the interface in a way that does not create broad duties.

Perhaps the law will adapt to create new or different liabilities for robo-advisors than for human intermediaries. Here, one might consider that accidents involving autonomous cars might invoke product liability rather than negligence. Will something similar change in the liability that attaches to intermediaries? If so, questions will arise about how to determine whether the AI is working properly and giving non-negligent advice.

But regulators can act now to create some level of protection in the new market. Regulators must first be able to evaluate the technology that matches consumers to a set of policies or carriers for quality, accuracy, and bias.[202] Given the weakness of the liability rules, regulators should also proactively evalu-

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[197] *See supra* Part I.C.2.

[198] *See supra* notes 100–105 and accompanying text.

[199] *See supra* notes 106–109 and accompanying text.

[200] *See supra* notes 108–111 and accompanying text.

[201] As Kate Crawford and Jason Schultz aptly argue with respect to big data, there is a growing and pervasive "belief that large data sets generate results with greater truth, objectivity, and accuracy." Crawford & Schultz, *supra* note 139, at 96. This same observation is increasingly true for AI and similar technology.

[202] *See* Baker & Dellaert, *supra* note 102, at 735.

ate the algorithms to make sure they match consumers to policies appropriately and make sure the choice architecture—the steps the AI leads a consumer through to pick policy options and carriers—leads consumers to the right coverage. To do so, regulators must build capacity to consider whether the choice architecture suggests that consumers purchase unnecessary policy options, too much or too little coverage, or miss policy options altogether.[203] Further, given the velocity with which the insurance industry changes, regulators must create some method of ensuring that AI is updated regularly. To combat potential conflicts and agency costs, regulators should mandate that third-party AI intermediaries disclose how they are being compensated. And, as with other uses of AI, regulators must consider how the information provided to the AI is protected from future disclosure.

B. Fraud Investigations

Insurers can also use AI to help evaluate fraud claims. An insurer's single biggest expense is payment of claims.[204] Some portion of those claims are fraudulent—representing inflated values, losses that never occurred, losses that policyholders intentionally cause, or are from policyholders that paid lower premiums by misrepresenting their riskiness in their insurance application.[205] There is some debate about the amount of fraud that occurs, but it is fair to say that insurers are significantly concerned about reducing costs related to insurance fraud.[206] AI provides new avenues for reducing the costs associated with fraud.

Insurers can use AI in several ways. After a policyholder makes a claim, insurers could use AI to determine whether the policyholder was truthful in his or her application. In some circumstances, misstatements by applicants could allow the insurer to rescind the policy and avoid paying the claim. Insurers could also use AI to more easily and cheaply detect and eliminate fraud. Here, insurers could use AI to identify both fraudulent and non-fraudulent claims limiting both type I and type II errors.[207] Moreover, insurers could use AI to

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[203] *Id.* at 739.

[204] Feinman, *supra* note 112, at 1325.

[205] Pierre Picard, *Economic Analysis of Insurance Fraud*, *in* HANDBOOK OF INSURANCE 349, 349 (Georges Dionne ed., 2d ed. 2013).

[206] While the exact amount of annual fraud is somewhat debated, insurers report thirty-billion dollars of fraud annually, which means that "[b]etween $.11 and $.30, or more, of every claim dollar is lost to soft fraud." *See* FEINMAN, *supra* note 113, at 169–70 (quoting these numbers, but arguing that these are self-serving numbers "promulgated by those with something to sell"). Whether the numbers are accurate is not relevant to this Article. What is relevant is that insurers believe that fraud is a significant problem and thus have a significant incentive to invest in rooting out fraud.

[207] Type I errors "occur[] when a legitimate claim is identified as possibly fraudulent." CHARLES NYCE, AM. INST. FOR CPCU & INS. INST. OF AM., PREDICTIVE ANALYTICS WHITE PAPER 6 (2007), https://www.the-digital-insurer.com/wp-content/uploads/2013/12/78-Predictive-Modeling-White-

better estimate the actual cost of loss and eliminate fraudulent over-claiming. Third, insurers could use AI to sequence the payment of claims more efficiently, saving both insurers and claimants time and money.

These uses, however, raise several concerns. AI might provide insurers a new avenue for denying claims based on the pejoratively-termed practice of post-claim underwriting. AI might also make it less expensive to investigate claims, making it cheaper for insurers to delay or deny the payment of valid claims. Also, AI might create a mechanism for insurers to limit claim awards below the amount requested by the policyholder to the precise amount that policyholders will accept without complaining. These concerns are addressed below.

1. Post-Claim Underwriting

Insurers have traditionally relied on the information provided by applicants on their insurance applications to underwrite and price policies. This applicant-provided information has traditionally been a necessary part of solving insurer-side information asymmetries.[208] When applicants lie or misrepresent important facts about themselves to obtain coverage or cheaper rates, insurers have a number of legal options. Those options represent a judicially-created balance between the insurer's right to information and the policyholder's right to make mistakes. AI might tip this balance toward the insurer.

When an applicant knowingly makes a fraudulent statement, the applicant may be subject to criminal sanctions, forfeiture of the payments, and rescission of the contract.[209] Where applicants do not intentionally defraud the insurer, but still make mistakes on their application, an insurer is protected if the misstatements are both material and if the insurer relied on the misstatements in setting rates or deciding whether to offer specific policy terms.[210] This standard

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Paper.pdf [https://perma.cc/NB7C-JS4W]. Type II errors are "the failure to identify a fraudulent claim and paying it as if it were legitimate." *Id.*

[208] *See* Baker & Siegelman, *supra* note 31, at 494–95.

[209] *See* FEINMAN, *supra* note 113, at 177 ("All states now make insurance fraud a crime, with two thirds of the states treating it as a felony."); Aviva Abramovsky, *An Unholy Alliance: Perceptions of Influence in Insurance Fraud Prosecutions and the Need for Real Safeguards*, 98 J. CRIM. L. & CRIMINOLOGY 363, 364 (2008). For the most part, these statutes apply to, among others, "false statements made by applicants for insurance" as well as "policyholders or victims who present claims to companies." FEINMAN, *supra* note 113, at 168. Additionally, many applications contain some version of the following warning: "Any person who knowingly presents a false or fraudulent claim for payment of a loss or benefit or knowingly presents false information in an application for insurance is guilty of a crime and may be subject to fines and confinement in prison." *State Fraud Warnings*, GRINNELL MUTUAL, https://www.grinnellmutual.com/claims/report-a-claim/State-Fraud-Warning [https://perma.cc/2HDG-KCX8].

[210] *See generally* BAKER & LOGUE, *supra* note 85, at 80; KEETON ET AL., *supra* note 90, § 5.7, at 570. In broad strokes, and understanding that there is some variation among jurisdictions, a statement is material if a similarly situated insurer, acting reasonably, would use the information in choosing

strikes a balance between the insurer's information needs and the policyholder's right to make a mistake. Insurers need accurate information to determine the appropriate terms and price for a policy. Accurately pricing and pooling policyholders allows insurers to combat adverse selection, moral hazard, and to create fair terms for the members of each risk pool. But punishing a policyholder for any misstatement might be unduly harsh. There is no reason to do so, for example, when the statements are irrelevant to the insurer.[211]

As discussed above, AI allows insurers to rely on a greater number of data points in pricing. This means that some additional number of statements by the applicant might be relevant for pricing and thus potentially material for purposes of a misrepresentation claim. This also means that policyholders will be responsible for the accuracy of more information they include in applications, but it will not be obvious which factors are relevant. When insurers use standard statistical techniques, humans must drive the analysis with intuition about what factors will be causal to an insured loss. For example, it is easy to see the link between age and likelihood of death. Therefore, it would be easy to see why life insurance companies would charge more to insure older policyhold-

whether to offer insurance and under what terms. An insurer can show reliance if, absent the misrepresentation, the insurer itself would not have issued the policy or would have issued the policy with substantially different terms. In other words, if the insurer would have issued the policy with the same terms if it had received the correct information, or if it knew the information received was incorrect, then the insurer did not rely on the misrepresentation to its detriment and cannot avoid its commitments. Materiality is an objective standard: would a reasonable insurer have used the information to decide how to price and issue? Reliance, in contrast, is a subjective standard: would the particular insurer at issue have used that information? *See* JERRY & RICHMOND, *supra* note 55, at 745 ("In most jurisdictions, the test for materiality is objective: the inquiry is whether *a reasonable insurer* under similar circumstances would be so induced. In contrast, some formulations of the materiality doctrine use a subjective test: whether *this particular insurer*, had it known the truth about the misrepresented fact, would have charged a higher premium or refused the insurance. As between the two tests, the objective test is more consistent with general contract law . . . .") (footnotes omitted)). Some jurisdictions elide the difference between materiality and reliance, defining materiality with both an objective and subjective component.

[211] Traditionally, applicants were warrantors of every statement in an application such that any misstatement provided insurers a complete defense to coverage regardless of whether the statement was material. KEETON ET AL., *supra* note 90, § 6.6(a), at 663 ("[N]oncompliance with a 'warranty' provision was a complete defense for the insurer regardless of materiality of the 'breach.'"). Legislatures and courts have significantly gutted this rule; now most statements are treated as representations. As Robert Keeton, Alan Widiss, and James Fischer note, for most lines of insurance: "Either as a result of legislative actions or judicial precedents . . . an insurer is usually precluded from treating incorrect information supplied by an applicant as a violation or a breach of warranty. Thus, an individual's answers to an insurer's questions in an application for insurance are almost always classified as 'representations' . . . ." *Id.* § 5.7, at 467–68 (footnote omitted); *see also* ABRAHAM & SCHWARCZ, *supra* note 24, at 15–16.

ers, and concomitantly that an applicant who misstates her age is understating her risk of loss.[212]

AI changes this. Neither insurers, intermediaries, nor potential policyholders necessarily know what information on an application is relevant for setting the terms of the policy. Algorithms mask the particular factors that are correlated to risk. Some examples should help show the problems inherent in using the old standard of materiality to judge statements found correlated to risk by an algorithm.

Imagine that in applying for homeowners insurance, an applicant lists his first name as "Bud," rather than "Bernard." All of his friends call him "Bud," and although he usually lists his given name on legal documents, he simply forgot on this day to put "Bernard." Imagine further that an algorithm determines that people with the name Bernard are more likely to suffer a loss.[213] One could construct a plausible, if unlikely, narrative for why this might be true: men named Bud are handy and can fix things around the house; men with the name Bernard are less likely to be able to keep a house in the same working order as people named Bud. The narrative, however, is less important than the correlation. So long as the difference between how the insurer priced the policy and how it would have priced the policy had it known the applicant's real name is substantial, this is likely a material misstatement.[214]

Consider alternatively a fairly standard question for homeowners: do you own a dog or any exotic pets? The obvious, ex ante concern for an insurer is liability for an animal bite, liability for other damage caused by the pet, or for the loss of the pet itself. But imagine that a crafty AI finds that people who own particular animals or particular breeds of dog are riskier for other types of liability.[215] For example, those who own pit bulls are less likely to take care of their property and therefore incur more slip and fall liability. This second-order link is not necessarily predictable before contracting. But under the current

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[212] The Restatement suggests that the difference in terms must be "substantial." *See* RESTATEMENT OF LIABILITY INSURANCE § 8 cmt. e (AM. LAW INST. 2019). That is, if the policy would have issued for $2,000 a year and, if the insurer had known the applicant's actual age would only charge an additional $100 a year, the misstatement would not be material. *See id.* For this example, assume that the misstatement changes the price substantially.

[213] Leave aside for a moment whether it is fair to charge someone more for insurance for something so trivial and out of their control. Here, this Article focuses solely on concerns about the materiality of the misstatement.

[214] *See supra* note 212 and accompanying text.

[215] In a way, this is the same kind of reasoning that yields higher auto insurance premiums for those with bad credit scores. Facially there does not appear to be a link between credit scores and automobile accidents. There may, however, be common psychological and biological roots to financial risk-taking and risky driving. *See* Patrick L. Brockett & Linda L. Golden, *Biological and Psychobehavioral Correlates of Credit Scores and Automobile Insurance Losses: Toward an Explication of Why Credit Scoring Works*, 74 J. RISK & INS. 23, 26 (2007).

standard, so long as the pricing difference is substantial, it would be considered material.

The question—assuming that the difference between the price offered for the policy based on the misstated information and the price the insurer would have offered had it known the truth is substantial—is should an insurer be able to avoid paying claims based on those misstatements?

First, Bud's misstatement is not the kind of predictable linkage that is generally seen in misrepresentation cases. Neither the applicant nor the insurer had any reason to believe that the name of the applicant was going to be relevant to the premium price. Yet, an insurer can plausibly argue that a reasonable insurer using AI to price risk, that is, a similarly situated insurer, would use information about the link between an applicant's first name and loss to set a price for the policy. Further, an insurer could argue, based on its algorithms, that it would have applied a different price had it known the applicant's first name. These arguments, if accepted, fulfill both the objective and subjective standards for misrepresentation.[216]

Perhaps there is some pressure to be applied to the objective portion of the standard. It is possible that a court would reject the argument that it is reasonable to use algorithms that spit out correlations with little obvious causal narrative. But, if other companies are using AI, even if those companies come up with different correlations to loss, the lack of a causal story may not matter. That is, if AI becomes the industry norm, all insurers will find correlations to loss that are not intuitive. If all companies do it, it will become presumptively reasonable. This highlights a critical issue for the objective portion of the misrepresentation test: as use of AI to price risk spreads, courts might be forced to accept whatever correlations the algorithms find as objectively reasonable. Further, if AI becomes the norm, it is the input, rather than the output, that will be reasonable. So long as most insurers price policies using algorithms, a court would accept any correlation that any given algorithm divines, regardless of whether other algorithms used by other insurers have found that connection. Indeed, if all insurers are using the same standards, the algorithms are simply keeping pace with the field, not creating a competitive advantage. Thus, it is the input—the algorithm—rather than the output—the particular correlation—that is being judged.

The second hypothetical, like the first, suggests a lack of predictability, but for different reasons. Even if it is predictable that owning a particular pet or particular breed of pet is relevant to pricing, neither applicants nor insurers are likely to predict the loss to which the algorithms suggest correlation. In other words, the parties to the insurance contract may believe ex ante that own-

[216] *See supra* note 210 and accompanying text.

ing a particular type of pet will increase premiums out of a joint recognition that the pet increases the likelihood of liability for the behavior of the pet. But most would not predict that there is necessarily a link between owning particular animals and other types of risky behavior. Thus, if there were the kind of second-order loss predicted by the AI, the insurer might be able to avoid coverage. A court might be forced to accept a misrepresentation defense if an insurer could prove the work of the algorithm, despite the fact that neither party to contract considered pet-ownership relevant to the second-order loss at the time of contracting.

These examples suggest that AI may undermine the balance created by the standard for misrepresentation. Insurers' need for accurate information—which is, of course, important—should not make it impossible for policyholders to make mistakes in the application process. By making any statement on an application potentially relevant to any loss, AI forces policyholders to bear a greater portion of the risk of mistake than under traditional pricing. With AI analyzing risk, any statement could be relevant to setting the rates or the terms of the policy. If true, any statement in a policy could be material and, once again, policyholders could be warrantors of the statements they make in applications. Courts must adjust their standards or lose the long-ago earned protections for policyholders.

2. AI and Policyholder Claims

AI and big data can also reduce the costs of identifying and investigating fraudulent claims and the administration of those claims. Although fraud is a major concern for insurers, the number of fraudulent claims is likely quite small relative to the total number of claims, and insurers might have a difficult time distinguishing legitimate from fraudulent claims.[217] Making good decisions at this stage is important, because investigations are not free and investigating every claim for potential fraud would be prohibitively expensive. Insurers want to make sure that they neither investigate too many claims nor ignore too many claims that could be flagged as potentially fraudulent. AI could help with this.

Insurers are sitting on reams of data from past claims and they have access to mountains of new information. Put together, and sifted by AI, these data could be used to identify patterns in claims and refine which claims to investigate.[218] Insurers have long looked at a number of external data, including "sudden increases in a policyholder's need for cash, inconsistencies in an injured party's medical evaluations, or the presence of accelerants at the site of a

[217] *See* NYCE, *supra* note 207, at 6.

[218] *See generally* Helveston, *supra* note 174.

fire."[219] Today, insurers regularly search social media sites manually for evidence of fraud.[220] For example, posting on social media about vigorous exercise after claiming a serious injury in an auto accident could be red flag for fraud investigators. AI opens up new avenues for research with both past claims data and this external data. For example, insurers are increasingly using AI to automatically comb through websites instead of searching manually.[221] Algorithms might find linkages between certain types of posts and fraud claims and thus significantly reduce investigation costs. This could help reduce both type I and type II errors by helping to identify fraudulent claims previously undiscovered by traditional methods and by weeding out legitimate claims that were previously investigated for fraud.[222]

Insurers can also use AI to help prioritize claims for handling.[223] Insurers that can identify which claims are likely to settle for higher amounts have a competitive advantage: they can handle the high-dollar claims internally quickly and outsource the low value claims.[224] This again helps reduce investigation costs and the potential of bad faith suits if insurers can pay legitimate claims more quickly.

Theoretically, insurers that use AI to weed out fraud and prioritize claims for handling are saving both themselves and their policyholders money. By identifying fraud through automation, insurers could save on the labor costs associated with manual fraud investigation.[225] Moreover, assuming that the algorithms do a better job identifying which claims are likely to be fraudulent, insurers can save because they investigate fewer claims that turn out to be legitimate losses and identify otherwise unidentified fraudulent claims. This should save on investigation costs and result in fewer expenses for claims. But, these theoretical savings suggest some very real concerns.[226]

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[219] *Id.* (citing ASS'N OF CERTIFIED FRAUD EXAM'RS, INSURANCE FRAUD HANDBOOK 42–102 (2009)).

[220] Young Ha, *In Few Years, Social Network Data May Be Used in Underwriting*, INS. J. (Oct. 13, 2011), http://www.insurancejournal.com/news/national/2011/10/13/219764.htm [https://perma.cc/V3S2-ANAY].

[221] *See* Mohan Babu & Soumya Chattopadhyay, *Claims Fraud: A Big Opportunity for Big Data & Analytics*, CLAIMS J. (July 29, 2013), http://www.claimsjournal.com/news/national/2013/07/29/233805.htm [https://perma.cc/E49Z-VS32].

[222] *Id.*

[223] *Id.*; NYCE, *supra* note 207, at 7.

[224] *See* NYCE, *supra* note 207, at 7.

[225] This assumes that the startup and maintenance costs of running the algorithms are less than the labor costs.

[226] Here, this Article assume that insurers will not intentionally use their position of power to investigate claims they know are legitimate to simply delay payment or intentionally discount claims because they divine that policyholders will not sue over a certain amount of underpayment.

Insurers could, because of the lower identification and investigation costs, decide to flag a broader range of potentially fraudulent claims for investigation. Insurers that delay paying claims, whether fraudulent or not, can make money on the float. This could lead to opportunistic behavior where insurers intentionally deny or delay paying claims in the hopes that policyholders will abandon them, allowing the insurers to avoid paying out.[227] But one need not assume that insurers act opportunistically. If AI reduces the cost of identifying and investigating claims, it may be reasonable to investigate a greater number of—more cheaply discovered—potentially fraudulent claims. So long as the cost of identification and investigation (plus the expected value of a bad-faith suit) is less than the reward of keeping the premiums and the expected value of finding additional fraudulent claims, insurers may choose to investigate additional claims. This is not necessarily opportunistic because insurers could have some seemingly legitimate reason for performing the investigation, but it could impact policyholders negatively by delaying payments of otherwise legitimate claims.

More insidiously, AI might be learning to chisel away at legitimate claims. At the first step of deciding to pay a claim, the AI must value the loss; it might determine that the claims represent real losses, but at inflated prices. This might be an innocent mistake on the part of the AI, but it might also be a feature of learning algorithms. The insurer likely instructs the AI to pay the lowest reasonable amount for a claim. When the AI receives negative feedback about its offers—such as when policyholders complain about the amount of the offer, sue for bad faith, or switch carriers—it will likely increase the offer to future policyholders with similar losses. But if the AI does not receive negative feedback, when the AI is presented with a similar loss in the future, it will likely offer the policyholder less to settle the claim.

There are a number of reasons why policyholders might not complain and give the AI a reason to increase its offer in future claims: policyholders might not know how much their claim is really worth and may accept the insurer's valuation; the difference between the insurer's offer to settle and the policyholder's claim might not be enough to justify a fight; policyholders might not have the resources or sophistication to fight the insurer or to bring a bad faith suit; and the transaction costs for switching insurers might be too high. The concern is that the AI can, through its iterative process, learn how low its offer can be before it gets any negative feedback. In effect, the AI is learning to price claims at the lowest point possible to extract the most amount from policyholders without negative feedback.

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[227] *See generally* FEINMAN, *supra* note 113.

In short, although AI might help identify fraud with more precision, there are potential concerns with this lower-cost method for identifying and investigating fraud. Regulators often use policyholder complaints to identify problems in the claims process. But with AI driving the analysis, those complaints may not materialize in sufficient numbers to trigger investigation. In fact, the AI might be designed to delay payment or price the payment at a level that avoids those kinds of complaints, but this does not mean that insurers are living up to their promises. The insurer might be delaying or lowering payments just to point of pain, but no further.

Given this, it is difficult to offer solutions to these problems. But a good start would be making more information available to the public. Most state regulators require insurers to report data on claims, rate of payment, and speed of payment, but keep that information largely secret.[228] Providing more information might allow researchers the opportunity to evaluate the quality of the claims processes.

CONCLUSION

The business of insurance is changing. At the front end of insurance relationships, algorithms are helping insurers price their products both by finding more precise correlations to loss and by determining the exact amount a consumer is willing to pay for coverage. Insurers are also using—or will soon be using—algorithms to advise consumers about the best policies to buy, tailor the terms and types of coverage specifically for each individual, and dynamically turn coverages on and off. At the back end, insurers are using AI both to root out fraud in applications and claims and to sequence claims for payments in unique and efficient ways.

The introduction of these new technologies is disrupting the premises of insurance regulation. AI is fundamentally different from the statistical techniques that once drove these same functions. Humans and human intuition do not underlie AI processes. AI works as an unstructured, iterative process to find correlations or solutions to problems posed by data scientists. These solutions are often unexpected and may not have easy or obvious causal stories. That is itself a big change.

Regulating in this new era requires some thought. These new algorithmic methods could, as described above, undermine protections built into insurance regulation, but they could also minimize some of the concerns that drove regulation in the first place. So, at bottom, these changes require some careful thinking about why insurance is regulated, and how.

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[228] ABRAHAM & SCHWARCZ, *supra* note 24, at 147; Feinman, *supra* note 112, at 1328–29.

As described above, insurance regulation exists both to correct market failures and to protect insurance markets in light of the important role that insurance plays in society. To do this work, regulators—including state insurance commissioners, legislatures, and courts—have erected a series of structures designed to prevent opportunism, correct the behavioral quirks of insurance purchasers, and socialize risks more broadly.

To continue to do this work, regulators must ensure that they have the ability, technical expertise, and information from insurers necessary to evaluate what AI is doing and why. In the realm of pricing, that might mean obtaining more data from insurers to see what the algorithms are using to price risk, and allowing insurers to gather data (and provide that data to regulators) to determine whether vulnerable groups are paying more for insurance. But regulators cannot stop there. Not all disparate impacts are the same, so regulators must further determine whether the impacts matter for a given category and line of insurance. Regulators must also consider whether, and how, price discrimination is affecting consumers. Insurance is far too important to ignore this excessive and discriminatory pricing completely, as has been done in other consumer contexts.

Regulators must further build capacity to evaluate the technology that is enabling robo-advice, including the matching algorithms and the decision engines that provide consumers with advice about the types of coverages to buy. They should also insist on regular updating of the algorithms and force some disclosure about how intermediaries are paid and how consumer data is protected. Additionally, as new forms of insurance come into existence, regulators must consider whether consumers are still afforded the traditional guaranteed protections in terms of clarity and amount of coverage offered. Lastly, regulators should consider making claims data available so researchers can carefully consider whether insurers are acting opportunistically in investigating fraud and making payments. Doing these things will provide the kinds of protections that the insurance markets need given the special role insurance plays in society.