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# AI, Ethics and Life Insurance: Balancing Innovation With Access

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The revolution in big data and accelerated underwriting is well underway in the life insurance industry. Technological innovations make it easier for consumers to interact with insurers across the life cycle of products and services, such as a user-friendly digital interface for buying products, faster applications or claims processing systems, or using alternative data sources to supplement or replace the need for physical blood or other samples. In today's sustained low interest rate economic environment, cost savings through technology is advantageous for both companies and consumers seeking to access tools for financial security.

In this paper, we focus on one aspect of technological progress: automated underwriting through the use of algorithms, machine learning and artificial intelligence (AI), and how their integration in underwriting raises novel anti-discrimination challenges for industry executives and regulators.<sup>1</sup> We refer to this process as "AI-enabled underwriting," which takes into consideration the algorithms used to generate the "big data" inputs available to insurers, as well as those instances where AI is used for underwriting.

We propose the following three areas where collaborative engagement between industry and its stakeholders is necessary to shape the path forward:

- 1. Rallying around trust as fundamental to successfully integrating technology and insurance accessibility.** We propose keeping stakeholder trust at the core of the conversation with respect to technology and life insurance. Policy considerations such as the use of novel big data sources and their impact on consumers, viewed through the lens of trust, can help leaders align the purpose of insurance products – to strengthen financial well-being – with long-term corporate value. Trust is also at the core of the National Association of Insurance Commissioners' (NAIC) framework for ethical use of AI, released August 2020.<sup>2</sup>
- 2. Align corporate culture with decision-making on AI.** While stakeholder trust is key for managing external relationships, the principles of ethical culture provide opportunities for employees to participate in driving solutions. Integrating AI across corporate functions requires collaboration to address emerging reputational, compliance, legal, and operational risks. Culture constructs, such as fairness in internal systems and leadership's openness to feedback, can facilitate the development of novel risk management solutions. For instance, developing processes for when human oversight over algorithms is necessary requires ethical awareness and process for collaboration among technologists, actuarial scientists, sales teams, and risk management.
- 3. Develop industry-wide standards for financial inclusion.** There are numerous areas relating to algorithm creation and audits where industry-wide practices would advance the field for all firms and consumers. The decentralized state-level approach to anti-discrimination regulation in the U.S. creates gaps in consumer protection. Moreover, AI brings new risks and the pace of change will accelerate with advanced technology. We propose industry-wide standards for certification practices by those who create algorithms and auditing standards for back-end periodic review of the systems' outputs. Regulatory guidance should address the gap in liability regimes for actions resulting from vendor practices, such as the accuracy of big data and the proprietary algorithms.

# Introduction

## FINANCIAL INCLUSION AND LIFE INSURANCE

The COVID-19 global pandemic has brought the importance of life insurance to the forefront for many consumers who have embraced it as a tool for bolstering financial protection and building inter-generational wealth. [See *Sidebar, How life insurance can be a tool for income preservation*]. According to some reports, the industry is experiencing a renaissance, which for some leading companies has led to double-digit increases in sales from last year, stemming from higher average policy values even as the number of policies sold has been decreasing.<sup>3</sup>

The pandemic has also demonstrated, however, the vulnerabilities of low-income communities, who have experienced disproportionately higher rates of infection and mortality.<sup>4</sup> The inverse link between health and financial security is clear: a recent Wall Street Journal analysis indicates that the majority of those dying from COVID-19 in the U.S. are also those individuals who are least likely to own life insurance.<sup>5</sup> While the elderly are the largest demographic group impacted, COVID-19 deaths among minority populations occur across a broad range of ages. In particular, 20% of COVID-19 deaths in the U.S. have been non-Hispanic Black people, who roughly comprise only 13% of the population.

In recent years, public discourse has increasingly focused on the social and economic inequities stemming from historical and systemic racial bias. Currently in the United States, the benefits of life insurance are less prevalent in low-income populations.<sup>6</sup> However, the potential for financial inclusion among minority communities is quite tangible. In fact, life insurance ownership is more common among Black households than White households. By contrast, Hispanic households have the lowest ownership levels of life insurance (both term and whole life insurance). For both demographics, however, low financial well-being measures and racial wealth gaps persist.

It is with this backdrop that many life insurance companies are increasingly focused on deepening the reach of products within communities of color through new marketing techniques as well as utilizing advanced underwriting and distribution mechanisms to lower product costs and help more Americans access tools that can enable financial security.<sup>7</sup>

## TECHNOLOGY AND FINANCIAL INCLUSION: A BALANCING ACT

### Technology Creates Capacity Through Lower Costs

Insurance underwriting relies on risk evaluation and classification, the bedrocks of insurance pricing. The industry uses experiential loss data and actuarial science techniques, combined with insights and predictions about individual behavior, risk, and outcomes to enable appropriate risk pooling, pricing, and underwriting of a product.

Estimating financial loss through effective risk evaluation requires accurate differentiation of risk between categories of people, companies, and behaviors. It also facilitates appropriate product pricing to cover losses, critical for managing a sustainable insurance model. These processes raise a critical challenge for insurers aiming to bridge the gap between historically underserved communities and access to life insurance products.

Unsurprisingly, risk-based underwriting and pricing models will result in higher premiums for individuals, or will exclude certain higher-risk individuals from access to products. Market regulation allows insurers to discriminate within certain limits because it enables consumers to have access to a “fair” price based on actual behavior (presumably lower, if the individual is “less risky”). This process can also encourage people to reduce risky behavior so that they pay less for their own insurance.<sup>8</sup>

Classifying individuals based on personal characteristics, such as age, gender, lifestyle choices, or credit history may raise questions about fairness in underwriting decisions, transparency around data that is used and the accuracy of that data, or assumptions used in predictions made about future behavior. These are thorny ethical and regulatory challenges, which the industry and regulators have successfully navigated throughout the past decades.

To address financial inclusion, the life insurance industry, through [the American Council of Life Insurers, has advocated for advancing innovation for expanded access to their products](#), particularly in underserved communities.<sup>9</sup> Integrating technology into the life cycle of the insurance business can be an effective method to enable market expansion, enabling digital solutions that range from customer acquisition, artificially intelligent underwriting, and servicing. It also has the dual benefit of improving the consumer experience and, ideally, reducing costs. Moreover, the reduced costs can create excess capacity to enable

insurers to expand reach to the middle market or address traditionally underserved needs.

The predictive power of AI, in particular, can be a game changer for the insurance industry. There are increasingly sophisticated artificially intelligent underwriting models available to evaluate big data and create a risk-based life expectancy profile for an individual, or a group. These models are designed to access more and more data, improving over time so that the predictions become increasingly accurate. Accuracy ideally results in operational efficiencies, such as cheaper and faster processing of applications, and presumably lower product pricing because of the lower risk assumed by insurers.<sup>10</sup> Machine learning systems and AI look for patterns among seemingly disparate characteristics, helping an insurance provider evaluate risk based on those correlations.

For example, data inputs into the algorithm (health records, consumer credit information) to understand how that data relates to the likelihood of higher or lower payouts for the population who shares those characteristics. Providing the algorithm with more data improves the machine's ability to recognize patterns between inputs and outcomes, using past behavior to seemingly predict an individual's or group's future behavior.<sup>11</sup>

The ideal result is systems that are more accurate, and the availability of more affordable life insurance products. This can lead to increased access to insurance products by more individuals, helping address one gap in financial well-being. [See Sidebar, Life insurance as a tool for income preservation]. Insurers' focus on inclusion through lowering costs creates capacity to address other financial inclusion challenges, including the face value of policies. Black-owned policies, by some estimates, have face values that are about one-third lower than White-owned policies in households with similar median incomes.<sup>12</sup>

### **AI May Increase the Risk of Financial Exclusion**

While the impact of technology on the life insurance industry can aid expansion into cultural markets, technology is also a double-edged sword: artificially intelligent underwriting systems could exacerbate negative societal outcomes, even when the intention of insurers is to achieve financial inclusion.

While AI enables expanded market access, it also has the potential to accelerate financial *exclusion*. Unlawful discrimination could occur by algorithmic systems that use facially neutral factors because the system's technical complexity obscures the

transparency of the data and analysis.

In other words, the pattern matching techniques of artificially intelligent underwriting systems heighten the potential that certain data inputs might serve as a proxy for prohibited characteristics. Proxy discrimination is a practice that occurs when "a facially neutral practice that disproportionately harms members of a protected class (and)... the usefulness to the discriminator of a facially neutral practice derives, at least in part, from the very fact that it produces a disparate impact."<sup>13</sup>

In the context of life insurance, the issue of proxy discrimination is complex. While insurers no longer use race data for underwriting purposes, states vary widely in their approach to other potentially discriminatory factors [See Appendix A, *The Regulatory Landscape for Anti-Discrimination*]. In addition, only New York and California have provided regulatory mandates directly related to the use of big data and AI in insurance underwriting. These states' regulators have articulated guidance relating to transparency and accountability for algorithms used by insurers. State regulatory responses have generally been, however, limited and localized in their impact.

Even when race is not an input into an algorithm, artificially intelligent underwriting could increase discrimination risk if the algorithm cannot control for fair pricing, offering equitable rates to similarly situated customers irrespective of their race or other legally protected characteristics. This is because if a system does not have direct race data inputs, it may assess risk on other characteristics that could serve as a proxy for race, such as geography, credit score, and criminal histories, unintentionally resulting in disparate impact on legally protected characteristics.

For example, assume an artificially intelligent underwriting software uses facially neutral factors, such as criminal history or consumer credit information. That combination of data can correlate with higher likelihood that the individual is Black or Hispanic because credit data could serve as a proxy for income, and criminal history could proxy for race, because historical discrimination against communities of color has resulted in less access to credit and lower credit scores and disproportionately severe penalties within the criminal justice system.<sup>14</sup> From a financial perspective, the insurer could decline the policy or charge higher premiums in order to mitigate the risk. From a societal perspective, both results could lead to financial exclusion.

Moreover, *how* the machines use data to make decisions can be more opaque than human-led systems. On the one hand, data-driven decisions may reduce bias because the data inputs are collected and programmed into the system, thus creating an objective process and evidence used for decisions. However, from a consumer perspective, the speed and complexity of the data accessed, analysis performed, and its impact on the decision creates opacity. In addition, many insurers use third-party technology providers who do not disclose the details of their proprietary algorithms, creating an additional level of opacity.

In Part II below, we put forward for consideration a framework for insurers and regulators when navigating the complex issues posed by the use of AI in underwriting, with the ultimate goal to further financial inclusion in the life insurance industry.

## Shaping the Path Forward – Frameworks to Advance Solutions

Shaping the path forward requires collaboration between industry, consumer and community groups, and regulators. To advance financial inclusion, it is imperative that stakeholders garner the benefits of machine learning, AI, and data science while balancing the potential consumer risks and unintended discriminatory consequences. The path should rest upon ethical or regulatory guardrails that can help integrate historically disadvantaged individuals while protecting against potential exclusion.

We present below a framework for *where* to begin. The answers can only come through collaborative engagement.

### IT STARTS WITH TRUST: ADVANCING THE PURPOSE OF LIFE INSURANCE

Trust is a critical element of the life insurance relationship. Introducing AI-enabled underwriting could make it more difficult to maintain trust-based interactions because the systems can be more opaque. Leaders should consider the potential implications of these approaches on the subsequent consumer decision to trust the industry.

**NAIC Principles:** In August 2020, [the NAIC proposed a framework for ethical use of AI](#), which integrates trust

as a key element. NAIC's principles, derived from the foundational Organisation for Economic Co-operation and Development's (OECD) AI principles, serve as a blueprint for the ethics-related questions regulators and industry should consider, beyond compliance with existing regulations and laws.

One of the NAIC principles is that companies should be "implementing trustworthy solutions" and that they be accountable "for the creation, implementation and impacts of any AI system." This sets a high bar for social responsibility, extending the industry's charge towards the *impact* of their products and offerings on society.

Embedding impact analysis into machine learning systems requires that the system (and companies) focus on accountability and transparency, principles that depend on industry leadership as well as collaboration among stakeholders, including the regulatory community.

**Accountability in the context of AI:** Accountability begins with a shared conviction about the purpose of life insurance, and industry-level alignment around the opportunity to help advance inclusion. Life insurance can be a powerful tool for financial security, for current and future generations. [*See Sidebar: Life insurance as a tool for income preservation*].

#### LIFE INSURANCE AS A TOOL FOR INCOME PRESERVATION

Life insurance is a powerful tool for ensuring financial security. When income-earning family members pass away prematurely, it serves as a vehicle for financial protection and building inter-generational wealth. Life insurance is a particularly effective method of creating wealth because the death benefit is guaranteed and is not subject to income tax in most cases.<sup>23</sup> As a result, a waterfall of tax-free benefits can flow across generations, enabling access to resources that might otherwise be unattainable, such as investing in businesses, financing higher education, staving off crippling debt, and reducing or eliminating potential dependency of the surviving family members on government assistance.<sup>24</sup> Moreover, whole life insurance policies can be used as an investment vehicle that enables policyholders to access the cash reserve within the policies and to earn income through dividend payments.<sup>25</sup>

Financial inclusion goes beyond merely expanding sales and access to products for historically underserved populations; it requires insurers to holistically address the needs for financial well-being. This includes access but also financial education and shared purpose around long-term financial security. In this context, financial knowledge is necessary to establish an opportunity for consumers to understand the difference between the types of available insurance products, and their benefits across generations. It may also require that industry create new products that address the disparate needs of individuals that may not necessarily fit the current demographic models. Furthermore, behavioral finance approaches, such as just-in-time disclosures, which puts in context the information at the time of decision-making, should be studied and integrated into managing customer relationships.<sup>26</sup>

To align corporate purpose with the goal of advancing financial well-being for all communities, insurers could define their accessible markets with inclusion in mind. While technology brings advantages, it can unintentionally reduce target markets. For instance, if AI is used for marketing purposes by micro-targeting populations based on factors such as Customer Lifetime Value or education levels, then this practice might increase the risk for excluding lower income communities.<sup>15</sup>

**The challenge of “Explainability”:** Transparency can help enable trust. Consistent with existing regulations, if a consumer is denied access to a product or is subject to an adverse underwriting decision, the consumer is entitled to an explanation about the rationale and the right to dispute those decisions.<sup>16</sup> Explainability, however, is a challenge for AI-enabled underwriting because systems, over time, will increasingly draw upon correlations of factors that may not be readily apparent to a human analyst or for a consumer to understand.<sup>17</sup>

Explainability is particularly challenging when companies contract with proprietary third-party services that do not share details about the algorithm with the insurer. Insurers must have a shared responsibility for understanding how their underwriting systems work, including decisions made by the algorithm, and should be prepared to explain how the categorization processes and pattern matching enabled by AI relates to outputs for individual applicants. The appropriate nexus between legal responsibility and regulatory responsibility with respect to algorithms should be further defined through regulatory guidance.<sup>18</sup>

Transparency as well as other principles of data ethics, such as consent and plain language disclosures, will not only engender trust among consumers, but it will also help educate them about their own financial condition, giving them an opportunity to remediate. [*See Appendix B, Principles of Data Ethics*]. This is a particularly important element of financial literacy and well-being.

## **CORPORATE CULTURE IS KEY**

Ethical decision-making relating to machine learning and big data is no different from any other decisions made about corporate strategy and business functions. The integration of data science and technology systems is a process, not a static consideration; developing internal mechanisms for discussion across corporate functions is necessary. The approach to technology governance should be similar

to other enterprise risk management considerations, which include both top down policies and bottom-up processes. Moreover, aligning new approaches with existing corporate values can help leaders develop internal ethics guidelines.

**Team-level openness, ethical culture:** Principles relating to an ethical corporate culture,<sup>19</sup> particularly the existence of a speak-up culture and ethical leadership that is open to feedback, will be paramount. The tone at the top should encourage open inquiry on the ethics of data use and potential unintended consequences, and facilitate internal discussions and workshops on related ethics challenges.

Particularly for employees on data science teams, it is important that the corporate culture encourage them to raise concerns to senior management. Concerns can range from reservations about the data sources accessed as inputs into algorithms, to broader questions about the strategic approach of the AI systems and the potential for reputation risk or unintended consequences from these data uses. There are [methods to assess corporate culture](#) that can help enable leaders to take the pulse of their own ethical culture, and identify areas for improvement.

**When human judgment prevails:** Leaders should consider which decisions require human leadership, and when the machine should operate more independently. Companies should periodically assess the following questions: Can your data teams identify when potential discrimination might occur and shut down the software in production if it is behaving in non-accountable ways? If such a shutdown irreversibly affects the business, perhaps human oversight over the system is needed and internal procedures should incorporate methods to triage applications.

Similarly, there may be areas where the AI or machine learning systems should not at all be involved. For example, companies could put in place a model that uses AI-enabled underwriting for limited purposes, such as policies up to a specific face value or burial policies. Outside those bounds, the model would require a process of checks and balances for larger face value insurance policies, where a committee could address potential disparate impact or proxy discrimination.

Moreover, given the excitement that automated underwriting systems may bring efficiencies to the industry, this might result in some managers or developers cutting corners to achieve expected goals. This is not uncommon in high-pressure environments with

laudable goals. Executive leaders should remain aware of this risk, and balance messaging around technology and related practices to create realistic expectations and related incentives, including audit processes.

## CONSIDER INDUSTRY-WIDE STANDARDS

Standardizing legal and regulatory frameworks can help address some of the concerns raised by AI-enabled underwriting. As discussed in Part I and in Appendix A, state anti-discrimination rules are inconsistent, and at present the regulatory response specific to the use of AI for life insurance or underwriting has been limited.

Even where regulations are implemented, as in New York and California, they are narrowly focused only on a few aspects of the emerging risks. In New York, the requirement that the insurer self-evaluate their data and underwriting systems, including third party data and systems, to establish compliance with anti-discrimination systems implies that internal review is sufficient. California's regulatory guidance takes a different approach, enabling transparency of underwriting algorithms (at present, only for property and casualty insurance) through the California Insurance Code's requirement that such underwriting rules be available for public inspection. They have not yet, however, provided guidance on sources of potential discrimination, and systems for review, audit or certification.

The nascent regulation covering AI in underwriting leaves significant gaps. While insurers can justify the use of an underwriting factor by showing that it is statistically related to assessing risk, no standards or thresholds exist regarding the factor's effectiveness. Additionally, the regulations rely on self-evaluation and reporting, but do not establish methods for conducting self-evaluations.

To resolve these gaps, we believe that the areas where industry-wide standards and practices would be most beneficial are 1) certification practices by those who create algorithms; and 2) auditing standards for reviewing algorithms. Additionally, regulators and industry should be mindful of the timelines necessary to advance solutions, which should occur in two phases. The first is a deliberate timeline focused on arriving at the appropriate governance approach and related standards, aiming to address these questions before industry adopts widespread use of AI-enabled underwriting. The second phase is implementation and periodic monitoring, which is a longer-term process.

### Algorithm Certification

Certification of the algorithm could serve as a proactive

measure to prevent bias in the software development phase. Certification represents the algorithm developers' compliance with a standardized set of best practices designed to mitigate bias and discrimination when creating the algorithm. The standards for best practice would be established with input from industry organizations and non-industry experts in ethical software development, in collaboration with regulators. The standards should track the auditing standards described below.

### Auditing

In addition to proactive certification, an audit would serve as a back-end check to ensure the system outputs are functioning as designed. In practice, algorithm audits will need to address two considerations: 1) establishing audit standards; and 2) establishing audit governance practices, including who should conduct the audit (internal or external, or both).

**Audit Standards:** National audit standards related to anti-discrimination should be developed. These standards must overcome a key challenge: while audits provide an opportunity to test adherence to an agreed-upon standard, they do not necessarily address the underlying societal fairness challenges. This is because one of the major weaknesses in relying on AI systems is that the system is only as good as the data. For instance, assessing error rates among life insurance outcomes (such as percentage acceptance among product application, or assessment of a "fair" price) when using a data input such as criminal history among Black and White households does not necessarily control for the socio-economic issue of high incarceration rates among Blacks.<sup>19</sup> In other words, while the data about criminal incarceration rates may be technically accurate and even highly correlated to life expectancy, the socio-economic context from which the data is derived may result in biased results.

Nevertheless, there is a growing research literature among data scientists developing statistical techniques to assess for fairness in algorithms and machine learning systems which could result in improved techniques and nuanced approaches. Techniques to conduct "fairness tests" with respect to different user groups (e.g., Black and White populations), for example, enable analysts to assess error rates among different user groups. [See *Side Bar, Considering fairness in access to credit*]

To address these concerns, standards should consider which data sources can be reasonably expected to provide un-biased and accurate inputs, particularly

with respect to new, “Big Data” sources (such as social media, patterns of financial behaviors, or aggregated criminal history information). Three threshold standards to consider are (1) the level of accuracy of the data (does the input accurately reflect the actual behavior exhibited? Is the data subject to systemic or institutional bias?), (2) the level of actuarial significance expected from each category of input (how much does the input contribute to evaluation of risk?); and (3) the target outcomes appropriate for algorithm calibration.

#### LESSONS FROM OTHER SECTORS: CONSIDERING FAIRNESS IN ACCESS TO CREDIT

Banking regulators seek to balance fair access to credit, with the lower costs and seemingly predictive powers of AI, which can at times lack transparency. While specific AI-related regulations are nascent, the existing regulatory infrastructure has provisions for disparate treatment and disparate impact analysis which extends to AI-enabled underwriting. For instance, access to credit is [regulated under multiple Federal laws and regulations](#), requiring lenders to collect race-related data, in contrast to insurance regulation, to analyze and monitor the impact of their activities, under the supervision of numerous state and federal agencies. Regulators signaled their openness to new, innovative “big data” sources in a [2019 Interagency Statement on the Use of Alternative Data in Credit Underwriting](#), acknowledging that some of these data will benefit consumers. They reiterated their expectation that applicable consumer protection laws will remain in force.

Moreover, [Federal guidelines relating to risk management](#) of quantitative models require lenders to demonstrate sound governance protocols and validation techniques, which relating to models that integrate AI techniques. The challenge of *explainability* and transparency with AI, however, remain [on the federal regulatory agenda](#).

In the context of innovation, notably, the CFPB announced a [Compliance Assistance Sandbox Policy](#) in 2019 developing a process for companies to submit applications for assistance when confronted by regulatory uncertainty relating to whether their new products and services comply with existing rules. The CFPB grants time-bound approvals, typically up to two years, essentially providing a safe harbor for testing of new products. Approvals include data sharing agreements, enabling regulatory access to the data needed to learn from and develop effective regulation.

**Audit governance:** Audits could either be conducted internally by the insurer themselves, or by an independent third-party, or both. If a company uses a third-party algorithm provider as a vendor, then that introduces another consideration about whether that party should self-audit, in addition to certification.

Once standards are established, an independent organization should be charged with conducting periodic audits of outputs at the firm level against the industry-wide standards. While self-audits have the advantage of efficiency and lower costs,

an independent audit removes potential conflicts of interest for companies, who would otherwise have to identify and report their own potentially discriminatory practices. Audits conducted by an independent organization would lend more credibility and objectivity to the audit process. This is particularly appropriate as life insurance companies no longer collect race-based data.<sup>21</sup> Having a third party serve as a repository to collect this body of data, or its equivalent, and conduct impact analysis also protects the industry against any potential accusations of data misuse. [See sidebar, *SEC guidance relating to robo advisors*]

Firms that use third-party underwriting vendors may find that those parties are reluctant to share their proprietary algorithms. State and federal legislators and regulators should consider whether proprietary algorithms advance the public interest. For instance, the California Department of Insurance [Legal Division Opinion of August 2018](#) on this subject has essentially mandated algorithm transparency for property and casualty underwriting rules by enabling requests for public inspection of underwriting systems (see Appendix A), consistent with their standard rate-setting process. Any policy rationale, however, should balance the goal of encouraging innovation through private property rights on the proprietary algorithm with public and consumer interests. One approach, for instance, could be developing model contract clauses between the insurer and a vendor, plus external audit processes to oversee the implementation of those responsibilities. Nevertheless, even if the algorithm remains proprietary, the output of the systems could be evaluated to identify any outliers or deviations from identified standards.

#### LESSONS FROM OTHER SECTORS: SEC GUIDANCE RELATING TO ROBOADVISORS

The SEC has provided a model for monitoring and testing of the performance of algorithms providing financial advice. In February 2017, they issued a Guidance Update recommending that financial advisory firms that use “robo-advisors” develop written policies and procedures related to (among other suggestions) development, testing, and back-end testing of the algorithm; monitoring the algorithm’s performance; and oversight of any third party that develops, owns, or manages the algorithmic code or software.<sup>27</sup>

# Conclusion: Assess, and Then Reassess, the Role of Technology in Financial Inclusion

Big data, AI, and machine learning can help reduce costs for products and services, thereby enabling the development of sustainable business models for financial inclusion. Yet, technology can bring about new risks for potential exclusion of historically disadvantaged populations. With the exception of one state, regulators have yet to tackle this issue head-on, resulting in gaps in regulation and a need for proactive monitoring by corporate leaders.

Macroeconomic and demographic trends are pushing the life insurance industry to seek efficiencies in product design and delivery. One resulting trend, for instance, is reliance on behavioral data to improve product underwriting and personalization of customer experience.<sup>22</sup> While it is reasonable that the industry seeks efficiencies in its operations, unless deliberate steps are taken towards financial inclusion, a business model emphasizing reliance on big data threatens to widen the wealth gap.

Related topics that warrant further analysis are marketing and customer acquisition processes that rely on digital leads or web-based interfaces (e.g., online applications). These systems could inadvertently exclude segments of the population based on facially neutral factors, causing outcomes that have a disparate impact on communities of color. Moreover, systems rely on analytics derived from social media or behavioral data to evaluate potential clients, then it could (i) lead to exclusion of those communities who either do not have access to digital tools or have low engagement and comfort with technology and (ii) integrate biases into the data models, similar to the models described in this paper, to potentially exclude communities of color. For these populations, developing approaches for relationship-based financial services and delivery channels could be more inclusive, as well as new and innovative products that more directly address their needs.

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## Appendix A

### The Regulatory Landscape for Anti-discrimination in Life Insurance and AI

#### ANTI-DISCRIMINATION REGULATIONS WITHIN THE INSURANCE INDUSTRY

The U.S. regulatory approach to anti-discrimination relies on either functional regulation of the activity (by a financial services regulator), or the regulation of the data collection in the first instance. The latter, as noted in the analysis below, is nascent and largely pending before legislatures.

Under the McCarran Ferguson Act of 1945 (the Act), insurance regulation in the United States is decentralized; industry oversight is largely under the purview of each state's Departments of Insurance.<sup>28</sup> The Federal Insurance Office (FIO), established in 2010, was created to monitor the insurance marketplace and to promote access to non-health insurance within traditionally underserved markets, but does not regulate insurance providers.<sup>29</sup> In fact, the Act expressly "reverse preempts" federal laws related to insurance if a conflicting state law arises, unless the law is specifically related to insurance.<sup>30</sup>

As a result, insurers are primarily subject to state laws regarding the use of discriminatory factors in underwriting. As we summarize in Table 1, some states prohibit or restrict the use of certain protected characteristics (race, gender, age) in the underwriting process, while others take a more generalized approach, which leads to inconsistencies across states.

The generalized approach requires that rates cannot be "unfairly discriminatory,"<sup>31</sup> which, in insurance parlance, means that rates cannot be based on discriminatory factors that are unrelated or only remotely related to the assessment of risk.<sup>32</sup> In other words, factors used to underwrite life insurance can discriminate, as long as the factors directly correspond to differences in risk. Table 1 refers to such an approach as a "general restriction."

A number of states have gone further, restricting an insurer's ability to use certain individual characteristics or other personal data to issue life insurance. Where the table notes a "prohibition" it is an instance where there is either a strong prohibition specifically outlawing the use of that factor in setting rates, or a general limitation on the use of the factor in connection with the issuance, renewal or cancellation of an insurance policy.



Table 1 demonstrates an inconsistent patchwork of anti-discrimination regulations nationwide.

<b>Life Insurance Underwriting Factor</b>	<b>State/Territory Restrictions</b>
Gender	2% prohibit; 98% expressly permit
Religion	20% prohibit
Race	24% prohibit
National Origin	24% prohibit
Age	24% generally restrict, 76% expressly permit
Sexual orientation	25% completely prohibit; 4% strongly limit; 73% generally restrict
Genetic Information	Approximately 30% expressly permit; 50% generally restrict; less than 20% specifically limit or prohibit
Credit Score	Approximately 25% expressly permit, 75% generally restrict, less than 10% specifically limit or prohibit
Zip Code	78% generally restrict, 16% have some limitations, 2% prohibit

The table demonstrates an inconsistent patchwork of anti-discrimination regulations nationwide. While some states achieve anti-discriminatory practices through outright prohibition of protected characteristics, others offer less protection through lower-level restrictions, or offer no protection at all.

For consumers, this creates an uneven playing field for access to life insurance determined simply by the state of residence. As automated underwriting changes the pace of change and scale of impact, these inconsistencies may lead to differing state-level practices and disparate impacts for geographic communities.

#### **REGULATIONS DIRECTLY ADDRESS THE USE OF AI IN INSURANCE**

U.S. regulators have taken a growing interest in the use of AI in consumer finance. Regulatory concern focuses on the lack of transparency regarding which data is used, algorithm functionality, and possible discriminatory outcomes.<sup>33</sup> The general approach of regulators has been to rely on the existing regulatory infrastructure to address AI-enabled use cases.

Regulatory responses that directly address new sources of data (such as social media and consumer behaviors) have been nascent so far. Only New York has directly addressed this topic. In a [Circular Letter](#) issued by the New York Department of Financial Services in January

2019, regulators expressed concern over the use of “unconventional data” from unregulated sources for life insurance underwriting purposes and the potential negative impact on consumers.

The Circular prohibits, among other provisions, the use of criteria for underwriting purposes unless the insurer can establish that the new underwriting approaches are not unfairly discriminatory (pursuant to existing rules). Furthermore, the regulation puts the onus on industry to demonstrate that the sources of big data used, as well as the algorithm, are nevertheless compliant with the existing anti-discrimination laws in NY. The burden remains with the insurance company to verify the claims of non-discrimination for data and proprietary systems provided by third parties.

California’s Department of Insurance has taken a less direct approach. They issued a [Legal Division Opinion in August 2018](#) that requires the algorithmic rules of “proprietary” systems used in property and casualty insurance underwriting be submitted to the Insurance Commissioner for review.<sup>34</sup> Furthermore, they enable transparency by the California Insurance Code’s requirement that such underwriting rules be available for public inspection. While this Legal Division Opinion letter applies specifically to property and casualty insurance, the [state assembly is considering legislation](#) that could have broader impact in the financial services sector.

# Appendix B

## Principles of Data Ethics For Consumer Protection in Insurance

Consent is a fundamental principle of data ethics, and is integrated into principles such as those [codified by the United Nations](#) as well as the [EU General Data Protection Guidelines](#). Consumers should be empowered to consent to both what data is used and how it is used for underwriting life insurance. Moreover, international norms of data rights suggest that consent be freely given, specific, informed, and unambiguous.<sup>35</sup>

Different categories of data present disparate ethics risks. Targeted behavioral data, such as heart rate monitors, exercise history, or schedules of doctor visits, can help create a more sophisticated pricing model targeting a smaller pool of insureds. Data collected through an app or device that is voluntarily used by a consumer (e.g., fitness trackers) presents a lower level of ethics risk compared to data scraped from social media, court records, health records, or credit scores, which raise heightened privacy concerns. However, the reliability of the data from behavioral apps is questionable and inconsistent across vendors.<sup>36</sup>

Under current practice, life insurance applications do ask for consent to access information such as medical records, court records, credit reports, and even publicly available information such as genetic databases and social media accounts.<sup>37</sup> Further transparency in this respect would enable consumers to be reasonably positioned to provide informed consent with respect to disclosures that are often buried in legalese. Mere disclosure may not be sufficient, as research shows that financial disclosures are not easily understood by laypersons.<sup>38</sup> As AI-enabled underwriting systems become more complex, these disclosures may become less and less understandable to the average consumer and perhaps even the insurer (see Explainability discussion, above).

As insurers begin to partner with FinTech companies and other technology providers, the business model of many tech companies also challenges a consumer's ability to provide informed consent.<sup>39</sup> State and federal legislators are contemplating new data privacy laws, raising questions about the interplay between regulating big data and its use for access to financial services. These emerging models will require new best practices for how consumers can provide informed consent without jeopardizing their access to a product or the price paid for it. Users accept free tech services and applications in exchange for the data collected and then sold to third parties, including insurance companies (or third-party vendors to the industry) who use the data for client acquisition and underwriting. In light of gaps in U.S. law and regulation, consumers are challenged to comprehend how their data is collected, to whom it is sold, and in which algorithms it is integrated.

For historically underserved communities, insurers should take a proactive approach. Technology infrastructure and access are not equally distributed throughout the U.S. By some estimates, approximately 35% of those living in rural areas, and 25% in cities are not able to access broadband at home.<sup>40</sup> Usage estimates based on race provides additional insight: the [Pew Research Center estimates](#) that only 66% of Black households and 61% of Hispanic households are broadband users, compared to 79% in White communities. Companies can address this potential imbalance by creating culturally appropriate access points for underserved communities or, where mobile use is higher than broadband, creating phone apps for ease of access. Drawing upon behavioral data to create actuarial models will likely be biased toward the behavioral characteristics and health outcomes of more populated, White urban and suburban areas. Moreover, for historically marginalized communities, the industry must consider how these data sources might serve as a proxy, thereby causing disparate impact among certain consumers.

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- <sup>1</sup> We broadly use the terms “automated underwriting” and “artificial intelligence” to describe the process of using automated systems to make decisions about classification and risk scoring of life insurance applicants. In practice, more specific terms designate different aspects of the underwriting process (for example, predictive analytics and algorithmic underwriting refers to the use of algorithmic models to make predictions about risk and classify applicants, while truly “artificially intelligent” systems that completely mimic human decision making are not in use). See, [Emerging Underwriting Methodologies and Their Impact on Mortality Experience Delphi Study](#), Society of Actuaries (August, 2018).
- <sup>2</sup> [NAIC Principles on AI](#), adopted by Executive Committee August 14, 2020.
- <sup>3</sup> Greg Iacurci. [Americans are “panic buying” life insurance due to the coronavirus pandemic](#). CNBC, October 20, 2020. In the past decade, life insurance ownership among the U.S. population has dropped by 9%, to 54%. [2020 Insurance Barometer Study Reveals a Significant Decline in Life Insurance Ownership Over the Past Decade](#). (2020, June 2). Limra.Com.
- <sup>4</sup> [COVID-19 Hospitalization and Death by Race/Ethnicity](#), Centers for Disease Control and Prevention, (August 18, 2020).
- <sup>5</sup> [Those Dying from COVID-19 Are Least Likely to Own Life Insurance](#), Leslie Scism, Wall Street Journal, (September 28, 2020). This correlation may also be partly driven by the number of elderly people (of all races) who generally don’t buy or hold term life insurance because the product is less useful later in life. The largest population that is dying at a high rate is older Americans: four-fifths of deaths have been people 65 years or older. The non-Hispanic Black population across a range of ages constitutes the second largest population.
- <sup>6</sup> [What Explains the Decline in Life Insurance Ownership?](#) Hartley, D., Paulson, A., & Powers, K. (2017). *Economic Perspectives*, 41(8), 1–20. Life insurance ownership has declined across all demographic groups, particularly among low-income households. However, life insurance ownership among Black households remains higher vs. other demographic groups, when compared across similar household asset values. This data is at the household level, not the individual.
- <sup>7</sup> The American Council of Life Insurers (ACLI) supports expanding products and services to culturally diverse communities, through the launch of its [Economic Empowerment and Racial Equity Initiative](#).
- <sup>8</sup> This is an over-simplification of the theory behind insurance, but helps lay the groundwork for analyzing the questions of fairness and transparency in insurance underwriting. See also, Southern California Law Review, *Understanding Insurance* describing that insurance companies are in the business of discrimination.
- <sup>9</sup> See, [ACLI Economic Empowerment and Racial Equity Initiative](#), launched October 2020. The industry has also recognized that diversity among financial advisors and agents can help advance financial inclusion among clients. Companies have developed numerous internal diversity and inclusion programs, as [described by the Insurance Information Institute](#), and companies including Allstate, XL Catlin, Hartford Insurance, Travelers Insurance, among others, have outreach programs focused on integrating minority, disabled, LGBT, and women-owned businesses into the companies’ supplier chains.
- <sup>10</sup> [Towards a Civil Rights Approach to Insurance Anti-Discrimination Law](#). Schwarcz, D. (2020, Winter). *DePaul Law Review*, 69(2), 659–697, 665.
- <sup>11</sup> [Proxy Discrimination in the Age of Artificial Intelligence and Big Data](#). Prince, A., & Schwarcz, D. (2020). *Iowa Law Review*, 105, 1257–1318, 1273.
- <sup>12</sup> Recent research by Haven Life, a life insurance agency wholly owned by Massachusetts Mutual Life Insurance Company, found through survey data that while Black individuals were more likely to have life insurance compared to White respondents, the amount of coverage was significantly lower for Black individuals. “The median income for Black survey takers was \$50,162 and \$54,823 for White survey takers. However, white respondents had a median coverage of \$150,000, while Black respondents reported having just \$50,000 in coverage. [Is there a life insurance race gap?](#) Haven Life Insurance, & Medine, T. (2020, September).
- <sup>13</sup> [Proxy Discrimination in the Age of Artificial Intelligence and Big Data](#). Prince, A., & Schwarcz, D. (2020). *Iowa Law Review*, 105, 1257–1318.
- <sup>14</sup> [Credit Scores Put Black Americans at a Disadvantage](#). Sophia Pitt, *Acorns, June 18 2020; Criminal Justice Fact Sheet*, NAACP, (last retrieved February 16, 2020).
- <sup>15</sup> See [Center for Economic Justice, Call to Insurers and Insurance Regulators to Address Society Systemic Bias and Inherent Racism in Insurance](#) (June 18, 2020).
- <sup>16</sup> See New York State Dept. of Financial Services. (2018, January). *RE: Use of External Consumer Data and Information Sources in Underwriting for Life Insurance* ([Insurance Circular Letter No. 1](#) (2019)).
- <sup>17</sup> See, [Asking ‘Why’ in AI: Explainability of Intelligent Systems – Perspectives and Challenges](#), Alun Preece, *Intelligent Systems in Accounting, Finance and Management*, 25(2), April/June 2018. On the implications of “inscrutable algorithms,” See also, Martin, K. (2018). *Designing Ethical Algorithms*. *MIS Quarterly Executive*
- <sup>18</sup> For an analysis of the rationale for holding algorithm developers accountable for the implications of their systems, See, Kirstin Martin, Martin, K. (2018). *Ethical Implications and Accountability of Algorithms* *Journal of Business Ethics*
- <sup>19</sup> [A Two-Factor Model of Ethical Culture](#), Caterina Bulgarella, PhD., Ethical Systems (date unknown),

- <sup>20</sup> See, [Criminal justice, artificial intelligence systems, and human rights](#), Ales Završnik, *ERA Forum* 20, 567-583 (2020).
- <sup>21</sup> [Old Notion of Black Mortality May Have Influenced Insurers](#), Scot J. Paltrow, Wall Street Journal, December 26, 2000.
- <sup>22</sup> Improving mortality rates combined with sustained low interest rates creates headwinds for the life insurance sector. As McKinsey predicts, “The proliferation of data and connected devices, particularly wearables, will continue to make it easier for life insurance companies to play an active role in shaping customer health—to everyone’s benefit.” [The Future of Life Insurance: Reimagining the industry for the decade ahead](#). Pierre Ignace Bernard, et. al., McKinsey.com, (September 29, 2020).
- <sup>23</sup> Araujo, M. (2020, July 7). [Transferring Wealth with Life Insurance](#). TheBalance.Com.
- <sup>24</sup> According to research by the Federal Reserve Bank of Chicago, “[T]he top three reasons for purchasing life insurance are to cover funeral expenses (51 percent), to replace lost income (34 percent), and to cover mortgage debt (26 percent). Transferring wealth to the next generation is a close fourth, with 24 percent of respondents reporting that this was a major reason for purchasing life insurance.” [What explains the decline in life insurance ownership?](#), Daniel Hartley, et. al., *Economic Perspectives*, Vol. 41, No. 8, 2017
- <sup>25</sup> Dalton, J., Dalton, M., Gilice, J., & Langdon, T. (2018). Insurance Planning (6th ed.). Money Education. <https://bookshelf.vitalsource.com/#/books/9781946711540/cfi/2/1/4/4@0.00:45.8>.
- <sup>26</sup> [Financial Education and Behavioral Finance: New Insights into the Role of Information in Financial Decisions](#), Garcia, M. (2011, October 17). Wiley Online Library; see also [Financial Literacy and Retirement Preparedness: Evidence and Implications for Financial Education](#). Lusardi, A., Mitchell, O *Bus Econ* 42, 35-44 (2007).
- <sup>27</sup> [Guidance Update](#), DIVISION OF INVESTMENT MANAGEMENT, SECURITIES AND EXCHANGE COMMISSION, (Feb. 2017), <https://www.sec.gov/investment/im-guidance-2017-02.pdf>.
- <sup>28</sup> [Understanding Insurance Anti-Discrimination Laws](#), Avraham, R., Logue, K., & Schwarcz, D. (2014). *Southern California Law Review*, 87(2), 199-274, 199-200.
- <sup>29</sup> US Department of the Treasury. (n.d.). [Federal Insurance Office](#). Treasury. Gov. Retrieved December 1, 2020
- <sup>30</sup> The underlying analysis and approach with respect to insurance anti-discrimination regimes in this Appendix A are derived primarily from the following two sources: [Understanding Insurance Anti-Discrimination Laws](#), Avraham, R., Logue, K., & Schwarcz, D. (2014). *Southern California Law Review*, 87(2), 199-274, 199-200.; [Towards a Civil Rights Approach to Insurance Anti-Discrimination Law](#), Schwarcz, D. (2020, Winter). DePaul Law Review, 69(2), 659-697, 667. Case law has not supported the imposition of the Civil Rights Act of 1964’s prohibition on refusing service or deny customers the “full enjoyment” of the businesses’ goods and services based on a protected class, such as race, gender, or religion on the underwriting process for life insurance.
- <sup>31</sup> [Commercial Insurance - Regulation](#). (n.d.). Insurance Information Institute. Retrieved November 10, 2020, from <https://www.iii.org/publications/commercial-insurance/how-it-functions/regulation>.
- <sup>32</sup> [Commercial Insurance - Regulation](#). (n.d.). Insurance Information Institute. Retrieved November 10, 2020, from <https://www.iii.org/publications/commercial-insurance/how-it-functions/regulation>.
- <sup>33</sup> American Council of Life Insurers. (2020, June 30). [LIFE INSURERS EXPRESS SUPPORT FOR ARTIFICIAL INTELLIGENCE GUIDANCE TO SAFEGUARD CONSUMERS](#) [Press release]; [Proposed Laws Could Make Washington Leader In AI Regulation](#). (2020, January 24). PYMNTS. Com; [Proposed Algorithmic Accountability Act Targets Bias in Artificial Intelligence](#). (2019, June). Jonesday.Com.
- <sup>34</sup> State of California Dept. of Insurance. (2018, August). [Confidentiality of Underwriting Rules Filed with Rate Applications Pursuant to California Insurance Code section 186 I .05\(b\)](#).
- <sup>35</sup> Article 7 of the [European General Data Protection Regulation \(GDPR\)](#), “Conditions for consent,” requires companies that collect, use, process, and share data about EU citizens comply with a series of regulations, including obtaining consent from individuals.
- <sup>36</sup> Hill, S. (2019, July 28). [How accurate are fitness trackers and does it matter? We asked an expert](#). Digitaltrends.Com
- <sup>37</sup> On disclosures, generally. See, The Dangers and Drawbacks of the Disclosure Antidote: Toward a More Substantive Approach to Securities Regulation. *Baylor Law Review*, 58, 146. Ripken, S., (2006). “In order for a disclosure system to be effective, not only must the information that is supplied be disclosed completely, clearly, and accurately, but it must also be read and comprehended by the consumer.”
- <sup>38</sup> Nicole G. Ianarone, [Rethinking Automated Investment Adviser Disclosure](#), 50 U. TOL. L. REV. 433, 440 (Spring 2019) (“Consumers are overwhelmed by the sheer amount of information disclosed.”). See also Susanna Ripken, Id., (“[D]isclosure that is too long or complex to be comprehensible to the average person floods the individual with too much nonessential data and overloads the person with information that inhibits optimal decision-making.”).
- <sup>39</sup> See, Platform Revolution: How Networked Markets are Transforming the Economy and How to Make Them Work for You. Geoffrey G Parker, Marshall W Van Alstyne, and Sangeet Paul Choudary, Norton, 2017.
- <sup>40</sup> The Pew Research Center, [Internet/Broadband Fact Sheet](#) (June 12, 2019); See also, Joyce Winslow, [America’s Digital Divide](#), Pew Charitable Trusts (July 26, 2019).