

**AI literature relevant for
professionalism**

**International
Actuarial Association
Artificial Intelligence
Task Force
Deliverable (2024)**

**Internal IAA
Document**

AI literature relevant for professionalism

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This document was prepared by the Professionalism workstream of the Artificial Intelligence Task Force (AITF) of the International Actuarial Association (IAA). The AITF was established to implement the [Statement of Intent for IAA Activities on Artificial Intelligence](#), as adopted by the IAA Council on 8 March 2024.

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No.	Source	Content / Abstract (100-150 words)	Key words	Relevance for professionalism	Remarks / added by
1	<p>European Insurance and Occupational Pensions Authority (EIOPA) (2024): Factsheet on the regulatory framework applicable to AI systems in the insurance sector. Frankfurt.</p> <p>https://www.eiopa.europa.eu/document/download/b53a3b92-08cc-4079-a4f7-606cf309a34a_en?filename=Factsheet-on-the-regulatory-framework-applicable-to-AI-systems-in-the-insurance-sector-july-2024.pdf</p>	<p>In this factsheet EIOPA offers a preliminary high-level overview of the legal framework applicable to AI systems in the insurance sector.</p> <p>The use of AI in insurance is already subject to insurance sector regulation and supervision. While the AI Act introduces some additional requirements for providers or deployers of high-risk AI systems, insurance sector legislation continues to apply across all use cases, regardless of their qualification under the AI Act.</p>	AI, regulation, AI Act, supervision		Takes into account the final outcome of the EU AI Act. Added by M. Kraft
2	<p>National Association of Insurance Commissioners (NAIC) (2023): NAIC Model Bulletin: Use of Artificial Intelligence Systems by Insurers.</p> <p>https://content.naic.org/sites/default/files/inline-files/2023-12-4%20Model%20Bulletin_Adopted_0.pdf</p>	Resource produced for US states to advise companies on the use of AI Systems, including those available from third parties, as they affect consumers, including appropriate governance and risk management processes and controls. It also asserts the state's authority to regulate, oversee, and examine AI Systems.	AI, governance, risk management, regulation, oversight, examination	Provides regulatory framework for use of AI in United States.	Added by K. Dyke

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3	Actuarial Association of Europe (aae) (2024): What should an actuary know about artificial intelligence? AAE Discussion Paper. Brussels. https://actuary.eu/wp-content/uploads/2024/01/What-should-an-actuary-know-about-Artificial-Intelligence.pdf	The report provides actuaries with a comprehensive guide to the evolving field of AI in the insurance industry. It highlights the potential of AI to improve data analysis and introduces new methods to address current actuarial challenges. It also examines the ethical implications and legal framework associated with AI. The report illustrates the transformational potential of AI across the insurance value chain, from product development and pricing to sales and marketing, underwriting and claims management. Given the rapid advancement of AI technologies, the report emphasizes the importance of adaptation through education and highlights the role of actuaries in the responsible use of AI to ensure the well-being and protection of customers and society.	AI, ethical implications, legal framework		Added by M. Kraft
4	Responsible AI Institute (RAI) (2024): Putting AI Standards into Action. Briefing Note. Austin. https://www.responsible.ai/putting-ai-standards-into-action/	This short article by Boston Consulting Group and the Responsible AI Institute proposes an AI governance framework and AI industry standards. The article also summarizes current AI regulation across different jurisdictions as well	AI Governance, Regulation, AI Industry Standards, EU AI Act, Consulting	There is explicit mention of relevant regulation, governance framework, and standards which are related to	Added by M. Kraft

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		as industry specific standards and certifications, which may be relevant from a compliance perspective. Overall, the article summarizes the current landscape of AI standards, and how industries may adopt them in response to increasing regulation and the latest technological developments.		professionalism and ethics from an industry setting.	
5	Commonwealth of Australia (2024): Safe and Responsible AI in Australia Consultation. Australian Government's Interim Response. Canberra. https://consult.industry.gov.au/supporting-responsible-ai	Paper issued by Australian government describing how AI can be developed and used in a safe, ethical, and responsible manner. It emphasizes the need for strong governance, risk management, and ethical principles to mitigate potential harms and ensure public trust. The paper seeks input on regulatory frameworks that could address issues like transparency, fairness, and accountability in AI systems. This initiative also focuses on how responsible AI practices can support innovation while protecting societal value.	Responsible use of AI, governance, risk management	Includes public response to opportunities and potential harm with AI	
6	National Institute of Standards and Technology (NIST) (2023): Artificial	Issued by NIST to help organizations address risks associated with AI by	AI, AI Systems, transparency,	Foundational document for	Added by K. Dyke

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	Intelligence Risk Management Framework. Washington, D.C. https://airc.nist.gov/AI_RMF_Knowledge_Base/AI_RMF	guiding the design, development, and deployment of trustworthy AI systems. It focuses on principles like transparency, accountability, and fairness, offering a structured approach for managing risks across the AI lifecycle. The framework emphasizes governance, mapping, measurement, and management to ensure AI systems operate reliably and align with ethical standards. This model is used globally to promote responsible AI use in different sectors. (K. Dyke, with assistance from ChatGPT)	accountability, fairness, governance	responsible use of AI intended for all industries	
7	Deutsche Aktuarvereinigung e. V. (DAV) (2024): Regulierung und Validierung von KI-Modellen [Regulation and validation of AI models]. Köln. [available only in German] https://aktuar.de/unsere-themen/fachgrundsaetze-oeffentlich/2024-02-26%20Regulierung%20und%20Validierung%20von%20KI-Modellen.pdf	The report looks at the current state of regulation and validation of AI models, with a particular focus on the challenges and opportunities that AI brings to the insurance industry. It presents various AI governance principles based on the principles of the EU AI Act, including proportionality, fairness and non-discrimination, data governance and record-keeping obligations, transparency and explainability, robustness and performance, and human oversight [see EIOPA (2021)].	AI, regulation, validation, modelling	Validation methods might be useful as examples to apply professional standards in respect of AI models.	Added by M. Kraft

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		The report examines the importance of data validation in the context of AI systems and highlights general data quality requirements, including specific regulatory aspects. It also discusses approaches and methods for validating AI models, the particular challenges of AI models and the need for new validation methods. The report concludes with a country comparison of different regulatory approaches to the validation of AI models.			
	Chat GPT—Understanding the Model, Professionalism Counts—June 2023, American Academy of Actuaries https://www.actuary.org/Professionalism_Counts_June_2023	Discusses implications of using generative AI tools like ChatGPT in actuarial work. Identifies risks for generating incorrect or biased information. Emphasizes importance of adhering to professionalism standards. Written by Brian Jackson, General Counsel of the American Academy of Actuaries.	ChatGPT, professional standards, exercising professional judgment	Specifically addresses use of ChatGPT by actuaries and includes references to US code and standards	Added by K Dyke
8	Generative AI: Opportunities and Pitfalls for Actuaries, American Academy of Actuaries Webinar, October 12, 2023	Discussed benefits and challenges of using generative AI in actuarial work. Identifies risks generative AI poses to actuary with respect to actuarial professionalism. Identified US	Generative AI, risks, actuarial professionalism	Provides education to US actuaries on application of Code and actuarial standards of practice	Added by K Dyke

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	https://www.actuary.org/sites/default/files/2023-10/Slides-Generative%20AI%20-%20Opportunities%20and%20pitfalls%20for%20actuaries.pdf	standards providing guidance for use of AI and potential pitfalls.		to the use of generative AI.	
9	Reaping the Benefits of AI While Avoiding Unfair Bias, The Actuary Magazine, Society of Actuaries, November 2022 https://www.theactuarmagazine.org/reaping-the-benefits-of-ai-while-avoiding-unfair-bias/	How actuaries can leverage AI in their work while being mindful of risks of introducing bias. (Good article combining AI ethics and bias)	ethics, bias		Added by K Dyke
1	Du Preez, Valerie; Bennet, Shaun; Byrne, Matthew; Couloumy, Aurelien; Das, Arijit; Dessain, Jean et al. (2024): From bias to black boxes: understanding and managing the risks of AI – an actuarial perspective. In: Br. Actuar. J. 29. DOI: 10.1017/S1357321724000060. https://www.cambridge.org/core/journals/british-actuarial-journal/article/from-bias-to-black-boxes-understanding-and-managing-the-risks-of-ai-an-actuarial-	A comprehensive paper exploring risks related to Artificial Intelligence (AI) from an actuarial perspective based on research from a transregional industry focus group	bias, black box, xAI, actuarial perspective		

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	perspective/9F06CF4E8EFB555202B2AA4ED78DD716				
	Black, R.; Tsanakas, A.; Smith, A. D.; Beck, M. B.; MacLugash, I. D.; Grewal, J. et al. (2018): Model risk: illuminating the black box. In: Br. Actuar. J. 23. DOI: 10.1017/S1357321717000150. https://www.cambridge.org/core/journals/british-actuarial-journal/article/model-risk-illuminating-the-black-box/FD2FD9F9DD86CCB611B4ECEF1421A7AA	A paper by the Institute and Faculty of Actuaries' Model Risk Working Party and follows on from their Phase I work, Model Risk: Daring to Open the Black Box	model risk, black box		
1	Government Actuary's Department/Financial Reporting Council (FRC) (2023). The use of Artificial Intelligence and Machine Learning in UK actuarial work https://media.frc.org.uk/documents/Research_on_the_use_of_Artificial_Intelligence_and_Machine_Learning_in_UK_actuarial_work_AK5H1We.pdf	A survey by the Financial Reporting Council in the UK on how actuaries are using AI			

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1	Institute and Faculty of Actuaries (IFoA) (2023): 2023 thematic review - Actuaries using data science and artificial intelligence techniques. https://actuaries.org.uk/media/g4ymoxep/actuaries-using-data-science-and-artificial-intelligence-techniques.pdf	The thematic review highlights the increasing involvement of actuaries in data science and AI, emphasizing the need for evolving professional development and standards to remain competitive. It notes the significant opportunities for collaboration and the importance of responsible and ethical use of emerging technologies, given the rapidly changing regulatory environment. The IFoA supports its members through standards, guidance, and lifelong learning opportunities, ensuring actuaries are well-equipped to navigate the growing applications of data science and AI.			The IFoA's latest thematic review on actuaries using AI in their work
	Organization for Economic Cooperation and Development (OECD) (2024): OECD Trustworthy AI principles. https://oecd.ai/en/ai-principles	The OECD AI Principles promote use of AI that is innovative and trustworthy and that respects human rights and democratic values. Adopted in May 2019, they set standards for AI that are practical and flexible enough to stand the test of time.	governance, AI, discrimination, AI definition, governance principles		
	Society of Actuaries (SOA) (2019): Ethical use of AI for actuaries.	This paper provides an overview of AI tools and disciplines, emphasizing the importance of ethical guidelines to mitigate risks such as data bias, automation consequences, and amateurish development.	ethics, AI, tools		

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	https://www.soa.org/49bd97/global/assets/assets/files/resources/research-report/2019/ethics-ai.pdf	Actuaries are well-suited to adopt AI due to their expertise in quantitative modeling, but AI's reliance on vast amounts of data and its potential ethical risks require additional learning and careful implementation.			
18.	International Association of Insurance Supervisors (IAIS) (2024): Draft Application Paper on the supervision of artificial intelligence https://www.iaisweb.org/uploads/2024/11/Draft-Application-Paper-on-the-supervision-of-artificial-intelligence.pdf	The IAIS application paper reinforces the importance of the Insurance Core Principles (ICPs), outlining how existing expectations around governance and conduct remain essential considerations for supervisors and insurers using AI. Furthermore, noting that AI can amplify existing risks, this paper emphasises the importance of continued Board and senior managers' education to establish robust risk and governance frameworks. The paper reaffirms that insurers (i. E. also their actuaries) remain responsible for understanding and managing these systems and their outcomes	IAIS, AI regulation, governance	Ongoing work of insurance supervisors has to be taken into consideration by actuaries, even non-binding advice. There's a risk of non-compliance.	Paper is still a draft and under consultation. Added by M. Kraft