THE IMPACT OF THE EUROPEAN ARTIFICIAL INTELLIGENCE ACT ON ACTUARIES: BETWEEN CHALLENGES AND OPPORTUNITIES

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The European Artificial Intelligence Act 2024/1689 ('AI Act') came into effect on August 1, 2024, with a phased implementation from 2025 to 2027. For actuaries, specialists in statistical analysis and risk modelling, this regulation introduces new obligations primarily concerning data governance, model fairness, and algorithmic transparency.

ACTUARIAL MODELS AND RISK CLASSIFICATION

The AI Act classifies AI systems into four risk levels. Systems deemed unacceptable, such as social scoring, are strictly prohibited. High-risk systems are subject to stringent rules aimed at ensuring safety and transparency. Limited-risk systems, such as chatbots, must comply with specific information and transparency obligations. Finally, minimal-risk systems are not subject to specific obligations. >

Actuaries working in the life and health insurance or banking sector are impacted by the provisions regarding high-risk AI systems ('HRAIS'). Indeed, AI systems used to evaluate the creditworthiness of individuals, or for risk assessment and pricing in life and health insurance, may fall under this category. This classification entails numerous compliance obligations.

A key point to note is that any AI system used for profiling, within the meaning of the General Data Protection Regulation (GDPR), is automatically considered high-risk. The GDPR defines profiling as an automated processing of personal data to analyse or predict personal characteristics, such as an individual's economic situation or health.

RISK ASSESSMENT: A DELICATE BALANCE FOR ACTUARIES

An actuarial model will not fall into the 'high-risk' category if it does not pose a 'significant risk of harm to the health, safety, or fundamental rights' of individuals, including by not materially influencing the outcome of decision making.

Thus, models that merely detect decision-making patterns or deviations from such prior patterns and are not intended to replace previously completed human assessments, are exempt from the provisions regarding high-risk systems.

Furthermore, regulatory requirements are applicable exclusively to models that are categorised as AI systems. The AI Act defines an AI system as a 'machine-based system that is designed to operate with varying levels of autonomy and that may exhibit adaptiveness after deployment, and that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments'.

The central element of an AI system is its capacity to infer. This inference capability, distinguishing an AI system from a traditional software system, includes both the process of obtaining outputs and the ability to derive models or algorithms from inputs or data. This distinction justifies regulatory oversight of machine learning techniques, which are widely used in actuarial models.

Therefore, actuaries face a threefold challenge: mapping their tools against the definition of an AI system, assigning a risk level to them, and anticipating the resulting obligations. Navigating these complexities is essential for ensuring proper classification of the models and compliance with the AI Act.

GENERAL OBLIGATIONS OF THE AI ACT AND IMPACT ON ACTUARIES

The AI Act imposes a set of precise administrative obligations on providers of HRAIS, starting with a statement of conformity, CE marking, and registration in an EU database. These requirements must be supported by internal control measures and the implementation of a quality management system that spans the entire lifecycle of the AI system.

For their part, the deployers (users) of these systems must conduct a Fundamental Rights Impact Assessment and, in cases where personal data is processed, perform a Data Protection Impact Assessment.

All this regulatory documentation will need to detail the measures taken to ensure the fairness and transparency of the HRAIS results, which are two major requirements of the European regulator. >

DATA GOVERNANCE AND FAIRNESS OBLIGATIONS

The AI Act significantly strengthens data governance obligations for HRAIS by imposing rigorous controls on training, validation, and test datasets, and requiring a thorough assessment of their availability, quantity, and suitability.

The objective is to ensure algorithmic fairness by identifying and correcting potential biases that could lead to prohibited discrimination. This involves a detailed review of the models, along with appropriate measures to detect, prevent, and mitigate biases. The previously mentioned Fundamental Rights Impact Assessment will need to formalise these controls and demonstrate the effectiveness of the tools used to limit algorithmic distortions.

Meeting these obligations may necessitate significant investments in data governance tools and rigorous validation processes. Additionally, actuaries will have to be trained in bias detection tools and methodologies, which are crucial for conducting the Fundamental Rights Impact Assessment and ensuring model compliance.

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TRANSPARENCY OBLIGATION

For actuarial models classified as HRAIS, the transparency obligation requires documenting the underlying logic of their outputs to facilitate interpretation. When these results lead to decisions with legal effects or significantly impact individuals, this requirement extends to providing an explanation to those affected.

In this context, actuaries will need to familiarise themselves with algorithmic transparency and model explainability tools and may even prioritise more interpretable models for a non-technical audience.

Regulatory compliance will thus necessitate strengthened collaborations between actuaries, data scientists, and legal experts. However, beyond the constraint, it also opens an opportunity: by enhancing transparency and fairness, it fosters public and regulatory trust and creates increased demand for compliant actuarial models. In this context, responsible AI could become a true strategic lever for the insurance sector.

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