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NEWSLETTER 05

Innovating Insurance: Data, AI & Smarter Decision-Making

From Insight to Action: Leveraging Data-Driven Decisions for Better Accuracy in Underwriting, Pricing and Claims Handling

Author: Hubert Said, ACII - Chartered Insurance Practitioner

The insurance landscape has been experiencing an unprecedented and rapid evolution on a scale never experienced before. Traditional methods of underwriting and claims handling that relied on manual processes and historical data are increasingly being replaced or augmented by data-driven decision making. This shift is transforming the industry as the deeper insights that can be gained are improving the accuracy of loss predictions and thus allow for more personalised pricing. It is also allowing insurers to deploy even more effective tools to

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improve efficiencies, particularly in processing claims and fighting fraud.

The wealth of data available to insurers today is staggering, sources like telematics, social media, and IoT (internet of things devices) devices such as wearables, the volume and variety of data offer unprecedented opportunities for analysis. By harnessing the power of advanced analytics techniques, insurers can extract valuable insights from this data, leading to more informed underwriting and rating decisions. The sheer volume of data necessitates the use of Artificial Intelligence (AI) to efficiently and accurately analyse historical claims data, demographics, and behavioural trends to predict a policyholder's risk profile and set more precise premiums.

Catastrophe Modelling, for instance, is increasingly seeing the use of AI which processes weather patterns, satellite imagery, and historical disaster data to predict natural disasters and potential claims volume, helping insurers and reinsurers in underwriting these risks more accurately than ever before. Considering that climate change is causing weather events to happen more frequently, being able to predict these more accurately is an essential tool that will help in providing insurance especially for regions that are more exposed than others.

Fine pricing of insurance products is not just about accurately predicting future losses and identifying risk factors, it is also about managing costs by improving efficiency. Any marketing guru will tell you that it is cheaper to retain a customer than to acquire a new one. This is backed by research that shows that acquiring a new customer can cost 5 to 7 times more than retaining an existing one. Insurers are using AI for customer retention as it enables them to predict which customers are likely to switch insurers, and then it tailors personalised policy recommendations based on lifestyle and risk factors to entice them to remain insured with them. The "Churn Predictive Model" uses machine learning to analyse customer behaviour, past interactions, and claim history top achieve this. It identifies patterns such as customers who frequently compare quotes online, those who had a recent premium increase and those who filed a claim but were dissatisfied with the outcome or the process. It then attempts to retain their loyalty by offering a discount or other incentives, changes in policy terms, or by suggesting a lower-cost alternative policy. Progressive Insurance, a US based motor insurer, reported that by using "Churn" their customer retention rate improved by 6%, and direct sales of motor insurance policies grew by 13% in 2022.

Cutting the cost of claims is also a common objective among insurance companies and many have significantly improved claims processing times using AI, machine learning, and automation as data-driven decision-making allow many claims to be settled in minutes instead of days or weeks. Lemonade, a US internet-based insurer, introduced AI-powered chatbots ("Maya" & "Jim") to process claims. AI collects claim details, analyses fraud risks, and makes instant payout decisions. Ping An (a China insurer) use AI & Image Recognition for motor damage claims with their system analysing accident images using computer vision to detect vehicle damage severity and then generates repair estimates in seconds. The same system is also used to verify images of damaged property.

While insurers strive to speed up claims settlements, they need to balance this against the risk of raising costs because of insurance fraud remaining undetected. According to the Association of British Insurers (ABI), detected fraudulent claims cost the UK insurance industry over £1 billion annually. However, when accounting for undetected fraud, the total cost is estimated to be around £3 billion each year. These are stunningly high amounts, and it is therefore hardly surprising that insurance companies are willing to invest heavily in AI, machine learning, and big data analytics to help them bring these numbers down. Aviva have deployed AI-powered fraud detection models to analyse millions of claims and detect anomalies. They use machine learning to identify patterns in fraudulent claims, such as suspiciously similar claims submitted by different individuals, claims with exaggerated damages or injuries and unusual behaviour in customer interactions. They reported that this helped reduce fraudulent claims by 20% as they saying that they were able to identify 14,000 suspect motor claims in just one year. Zurich implemented AI-powered voice analysis to detect stress levels and inconsistencies in claimant phone calls. This helped reduce false claims detection time by 40% as they were able to identify fraudulent claimants in real time.

As technology continues to advance, we can expect even greater personalisation in policy pricing, real-time claims automation, and enhanced fraud prevention powered by AI-driven behavioural analysis. The future of insurance will very likely be defined by predictive analytics, automation, and seamless customer experiences, ensuring a more efficient and fair industry.

Transforming Healthcare Insurance: The Role of AI in Enhancing Accuracy and Efficiency

Author: Andre Farrugia, PhD MSc FCII CFIRM

The healthcare insurance landscape is undergoing a dramatic transformation, driven by escalating costs, evolving consumer expectations, and the increasing potential of artificial intelligence (AI). AI is no longer a futuristic concept; it is rapidly becoming a crucial tool for enhancing accuracy and efficiency in claims processing, fraud detection, risk assessment, and customer service, ultimately leading to a more streamlined and affordable healthcare system.

Claims processing

One of the most significant impacts of AI is in claims processing. Traditionally, this has been a manual, time-consuming, and error-prone process. AI-powered solutions, however, can automate many aspects, significantly reducing processing times and improving accuracy. For example, companies like Optum and Change Healthcare utilise AI-driven tools to analyse medical images, interpret medical codes, and identify inconsistencies or inaccuracies in claims data (Jordi labs, 2025). This automated pre-processing not only speeds up claims adjudication but also minimises human error, reducing the need for manual review and appeals. A study by McKinsey found that AI could reduce healthcare administrative costs by up to 25% (McKinsey & Company, 2019).

Fraud detection

Beyond claims processing, AI plays a critical role in fraud detection. Healthcare fraud is a significant problem, costing billions annually. AI algorithms can analyse vast datasets, identifying patterns and anomalies indicative of fraudulent activity that might be missed by human reviewers. These algorithms can learn

from historical data and adapt to evolving fraud schemes, improving their detection rate over time. Companies like Health Catalyst are using AI to identify potential fraud cases, resulting in millions of dollars in savings for insurers (Tealium,2025).

Risk assessment and underwriting

By analysing patient data, including medical history, lifestyle factors, and genetic information, AI can help insurers assess risk more accurately and develop more tailored insurance products. This allows for more accurate pricing and the potential for more personalised and affordable coverage options. Companies are increasingly using AI-powered tools to assess risk profiles for individuals and businesses. AI-powered chatbots and virtual assistants can provide instant answers to policyholder inquiries on a 24/7 basis, reducing the burden on human ability and improving response times. These tools can handle routine requests, freeing up human resources to address more complex issues. Companies such as Lemonade have successfully integrated AI-powered chatbots for seamless claims handling and policy management, resulting in faster claim payouts and improved customer satisfaction.

However, the integration of AI in healthcare insurance is not without its challenges. Data privacy and security are paramount concerns. Insurers must ensure that AI systems comply with data protection regulations (such as GDPR) and safeguard sensitive patient information. Algorithmic bias is another concern. AI algorithms are dependent on data, and if that data reflects existing societal biases, the algorithms may perpetuate or even amplify those biases in their decisions. Transparency and explainability of AI algorithms are also crucial to ensure fairness and accountability.

Smarter Underwriting: How Data Analytics is Shaping the Future of Risk Assessment

Author: Francis Valletta, ACII, Chartered Insurer

Since its inception insurance has worked because of the Law of Large Numbers, a fundamental statistical principle that allows insurers to predict losses and set premiums accurately. This law states that as the number of similar, independent risks (policyholders) increases, the actual loss experience will become closer to the expected loss. This helps insurers reduce uncertainty and make reliable predictions about future claims.

In simple terms, if a motor insurer covers only 10 drivers, an accident involving 2 of them is a 20% loss rate, but there being such a small number of risks, the 20% loss rate cannot be reliably used to predict future losses. On the other hand, if an insurer covers 100,000 drivers, the loss rate will be more stable, and future losses can be predicted much more accurately.

In today's data-driven world the insurer's task is made much easier due to the availability of a myriad of data sources and the speed with which the data obtained can be processed and analysed. Insurers use this data to identify patterns, trends and insights that help them assess risks and set premiums much more accurately and in a more granular manner than ever before.

Data-driven approaches are supplanting traditional methods as the need to assess risks more accurately becomes even more important. It can be said that data analytics has revolutionised how insurers understand, evaluate and price risk leading to smarter underwriting. Traditionally, underwriters relied on historical claims data, expert judgment, and standardised risk categories. While effective, these methods often lacked granularity and the ability to adapt to nuanced or emerging risks.

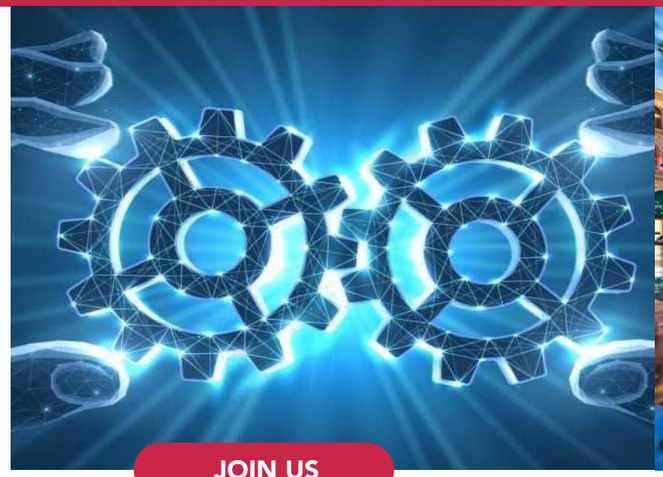
Data analytics has changed this paradigm by introducing the ability to process and interpret vast amounts of data from diverse sources in real time. Advanced tools like predictive modelling, machine learning, and artificial intelligence (AI) enable insurers to uncover patterns and insights that were previously invisible. These tools provide a more comprehensive understanding of risk, allowing underwriters to make informed decisions with unprecedented accuracy.

The US motor insurer Allstate, like many other motor insurers relied on demographics (age, gender, location) and past claims history to price its motor policies. This did not account for actual driving behaviour of individual drivers, meaning good drivers were sometimes overcharged, while risky drivers were undercharged. Allstate then introduced "Drivewise", a usage-based insurance (UBI) program using telematics data obtained from devices fitted in cars ("black boxes") or from the drivers' smartphones. It tracked real-time driving behaviour, including speeding, hard braking and acceleration, time of day driving and total mileage covered. Since it collected a massive amount of driving data, Allstate used machine learning to identify risk patterns. By analysing driving habits instead of just demographics, they could more accurately predict accident risk. As a result, safe drivers received discounts of up to 40% while risky drivers paid higher premiums, even if their demographics suggested otherwise. It was also able to offer more affordable cover to younger drivers who traditionally had high premiums but proved to be acceptably safe drivers through telematics data.

This is one good example of how insurers are using different and new data sources for their analysis. Aside from telematics data insurers are now accessing geospatial and environmental data monitoring systems to assess risks related to natural disasters and flooding. Social media and consumer data is also being used to assess individual risk profiles which added to other data sources such as credit scores and medical data, lead to a very granular assessment of risk allowing for much more accurate loss predictions and pricing.

As always there are downsides as well. Incomplete or inaccurate date can compromise the result while the actual development and deployment of advanced analytical tools requires substantial investment in specialised expertise aside from expensive technology. In the meantime, concerns about privacy and data protection are causing regulators to impose wider restrictions on insurers to handle this data sensitively and to be transparent in how they are using it. More regulation is expected, in fact the upcoming EU AI Act will significantly impact how insurance companies use AI for pricing, claims, and fraud detection. Insurers will have to ensure compliance, improve transparency, and prevent bias to avoid penalties and maintain customer trust. One other area of concern is the granularity of the results may mean that certain individuals end up being uninsurable or find insurance unaffordable, so solutions for this need to be found. The AI Act will in fact require much more scrutiny on AI Pricing Models and states that AI-based underwriting must be explainable and non-discriminatory.

The future still appears exciting as blockchain technology will provide tamper-proof data, while advancing AI capabilities could enable even more sophisticated predictive models. As insurance continues to evolve, these technologies will continue to play an increasingly important role in risk evaluation and loss prediction.



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10th April 2025
08:30 - 15:30
The Phoenicia, Malta

Navigating the Future of the Insurance Industry

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17th April 2025
9:00 - 18:00

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Centris Business Gateway II, Level 4,
Triq is-Salib tal-Imriehel Zone 3,
Central Business District,
Birkirkara, CBD3020

+356 2777 2777
info@mitcentre.com

www.mitcentre.com

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