

AI in Practice: Building Practical Solutions for a Resource-Strapped Insurer

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AI IN PRACTICE: BUILDING PRACTICAL SOLUTIONS FOR A RESOURCE-STRAPPED INSURER

When you work for a small insurer that still operates like a scrappy startup, you quickly learn that doing more with less is the default setting. Testing and iterating are in our DNA, and we try, fail, and learn on a regular basis. As the only in-house actuary, I was often seen as the go-to for technical work and gradually became the analytics guy, then the data science guy and, eventually, after my manager came to me and said, "We need to do something with AI," I became the AI guy.

At the time, my understanding of AI was very superficial. I was intimidated by the thought of having to 'build' an AI model but quickly realized that you can get a lot done with some good data wrangling and prompt engineering. Results came slowly but, over the past two years, we implemented three applications that delivered value, none of which required deep AI expertise. Each was different, but together they reshaped how we work and gave me a practical perspective on what AI can (and cannot) do in an actuarial setting.

AUTOMATING CUMBERSOME TASKS

One of our junior analysts used to spend several hours a week linking incoming leads to the advertisements that generated them. It was repetitive, demotivating work which wasted the time of a highly competent resource. For years, we tried to automate it in Excel and VBA but never cracked it. The problem was that a lot of the task relied on pragmatism, such as spotting typos, judging half-complete records, and making quick calls that were obvious to a human eye but impossible to cover with rigid rules.

This became our first experiment with a custom GPT. The early results were almost comical; the model seemed confident, but when tested against validation data, the accuracy was completely off. That was the moment I realized that people worrying about AI taking over the world in the foreseeable future may be getting ahead of themselves.

Through trial and error, we eventually got the prompting right. After a few more iterations, and once we built API connections, the process became seamless. The analyst who had spent hours each day on grunt work now only stepped in for prompt refinements and edge cases. The time savings were significant, about 20% of her week but, more importantly, the work itself became less mind-numbing and more engaging.

New challenges came with new lead sources where the model had to be retrained or guided, but this was our first tangible AI success: solving a problem that rules-based automation simply couldn't.

Tips for actuaries: AI shines in messy data environments where human-like judgment is needed, but success only comes after persistence and careful iteration.

CLAIMS PROCESSING

Our second attempt was claims processing. The dream was bold: fully automated straight-through processing, but being a European business meant GDPR quickly set hard boundaries.

Explainability and transparency are at the heart of GDPR. The primary goal was to speed up claims' payments, so we considered using an AI model that only made straight through processing for approved claims. Then, we sent the rest for human approval (therefore only making the decision where outcome was positive for the customer); however, it still fell short. Under GDPR, even positive-only automated decisions count as 'solely automated processing' and require transparency and human oversight. We also wanted to avoid introducing friction by asking our customers, who tend to be lower income and less tech savvy, for explicit AI approval.

So, we pivoted to a hybrid approach. In the first stage, AI read and processed claim documentation, flagging where further information was needed. In the second stage, deterministic rules inside our system handled only the most obvious cases, like clear acceptance or denial of a natural death claim on an accidental policy; decisions that could be explained and traced line by line.

Anything above thresholds or outside the standard rules was categorized by AI but always referred to a person for final approval. The focus shifted from trying to automate everything to targeting the majority of straightforward claims while flagging possible fraud or incomplete submissions for human review.

Luckily, most of our business was whole life, with very low decline rates. The system dramatically improved processing time for simple claims, saving costs and freeing claims staff to focus on the few complex cases.

Tips for actuaries: In regulated environments, efficiency must be balanced with governance and trust. Sometimes, the pragmatic solution is not full automation but a carefully designed hybrid model.

LEADS PROFILING AND CUSTOMER VALUE

Our final use case was building a lifetime value model. This was something we'd wanted for years but doing it deterministically in Excel always felt overwhelming. The data spanned multiple dimensions including leads, customers, and products, each with different starting points. On top of that, actuarial projections like VNB were being run separately in Prophet, meaning we had to link multiple complex data sets together.

The hardest part, as is often the case with actuarial work, was the data. It needed to be cleaned, stitched together, and anonymized without losing meaning. GDPR rules meant no model could be trained on information that could be tied back to an individual, so we had to strip out identifiers like policy numbers and dates of birth while still maintaining enough structure to make the data useful.

Once the foundations were in place, we were able to start using AI to profile leads, prioritize sales activity, and recommend cross-sell opportunities. It has already cut down on a huge amount of manual work and uncertainty in deciding which customers to engage with, when, and with what products. The model is still in its early stages and will require ongoing refinement, but AI enabled us to build something that would have been nearly impossible with a traditional deterministic approach.

Tips for actuaries: AI makes it possible to tackle problems of scope and complexity that are impractical with traditional tools. The payoff may take time, but even early gains can change how decisions are made.

REFLECTIONS

Across all three projects, a few themes stand out:

- AI is not plug-and-play. Each success came only after iterations, false starts, and persistence. The hype of overnight transformation doesn't reflect reality.
- Human oversight is critical. From refining prompts to approving exceptions, actuaries and analysts remain central. AI doesn't replace judgment so much as it enhances and augments it.
- Governance matters as much as innovation. Especially in regulated environments, transparency and explainability are not optional.
- The biggest wins came from freeing people up. Removing repetitive, low-value work allowed staff to focus on higher-impact tasks, improving both efficiency and morale.

My journey into AI began with no expertise and a vague mandate to "do something." What followed wasn't smooth or glamorous, but it was transformative. Through three very different use cases, we learned how to use AI to ease repetitive tasks, respect regulation, and build capabilities that would have been out of reach otherwise.

For actuaries at smaller companies, I believe this is the real story of AI. It is a journey of smaller practical enhancements, rather than dramatic replacement. It is less about an overnight revolution, and more about messy, incremental wins that free us to focus on the areas where judgment, context, and creativity matter most.

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