

**SDS PODCAST
EPISODE 268
FIVE MINUTE
FRIDAY:
DATA SCIENCE
IN
INSURANCE**



This is FiveMinuteFriday, episode number 268, Data Science in Insurance.

Welcome back to the SuperDataScience podcast ladies and gentlemen, super excited to have you back here on the show today. We've got another lovely episode from our series of data science in certain industries.

And if you've been up to date with the podcast, you will know that so far we've covered off quite a bit of different industries. We've done data science in agriculture, banking, in construction, in education, in entertainment, in government, in healthcare, in mining, in real estate, in retail and in transportation. So that's 11 so far. And this is our 12th one. And yeah, if you're interested, you can always find the previous ones at superdatascience.com/podcast and there we've got a very handy functionality for you to search for episodes or you can just filter for the FiveMinuteFriday episodes, then listen to your industry. With that said, we're moving on to data science in insurance.

So what have we got today? Insurance is an industry in which businesses provide coverage in the form of compensation resulting from loss, damages, injury, treatment or hardship in exchange for premium payments. Interestingly enough, the very first insurance company was started in the UK of to the great fire of London in 1666 where, the whole of London, nearly the whole of London got destroyed and burned out.

And so the company was started in 1667 is called The Insurance Office. And the primary purpose was of course, to indemnify for losses due to fire. So the insurance industry is quite old. Today the global revenue of the insurance industry is \$4.5 trillion, trillion with a T, massive industry with a percentage total of GDP at a 6%. And pretty much anything can be insured, not just property, possessions, health, ability to capacity to work. But we're talking about massive ships, buildings, projects, and so on. So pretty much anything in this world can be insured if you have the will or the money you can find somebody who will ensure that for you. And today we, we're



looking at five use cases of data science and artificial intelligence in this massive industry of insurance.

Use case number one, it's called usage based insurance. So historically insurance has been a very statistical type of industry or type of undertaking. So basically insurance companies need to calculate their premiums, calculate how many claims are going to get, and then they need to set those premiums in such a way so that they're not too low and not too high. So on one hand, if the premiums are too low, they will lose money. On the other hand, if the premiums are too high, then that particular insurance company won't be competitive. So it needs to find that balance and needs to kind of predict how many claims we'll get. And as you can imagine from the law of large numbers, the more it's ensuring the better for the company. So, it can rely on the statistical significance of its predictions more.

But nevertheless, what's happening now is that with the advancement of machine learning and artificial intelligence and data science, less and less assumptions or broad assumptions about customers are required because we can tailor insurance programs to specific users, specific behavioral patterns, specific situations.

And one of the prime examples of this in action is the car industry where devices are being used to monitor how drivers are driving cars and therefore that is informing insurance companies on what premiums they should set. So risky drivers get higher premiums, more confident or more careful, cautious drivers get lower premiums. And trial programs in the US have estimated that savings of between 50 to a 100 dollars per year for the average customer are possible through such programs. And we've got an example here. We've got actually a couple of examples. So Snapshot is an insurance option available in some US states. It measures high risk incidents such as heartbreacking or heartcornering through a small device you plug in to your car. It then analyzes your driving through a series of



machine learning algorithms, comparing it to the billions of miles of data that they've gathered from various drivers.

Safe drivers are then offered a discount on the car insurance premium. As you can imagine, that also encourages people to drive safer, which is great. Also if you're being listening to this podcast, you know that Dan Shiebler who's now a Twitter cortex but previously was at True Motion, he appeared on the podcast in episode 59. And by the way, he's been a guest at DataScienceGO 2017 and 2018 so you can catch his talks in the DataScienceGO recordings archive. But nevertheless you can check out episode number 59 when he was at True Motion. He described in a lot of detail how these machine learning algorithms work. And also in July this year, you'll hear from Ian Davidson who is the founder of GoFar. Another company, yet another company who, is in this space of analyzing drive behavior and has some ideas on how they can help with the whole insurance situation.

And so as you can see, all these companies are popping up. They're actually estimates showing that about 20% of all our insurance or insurers will offer usage based insurance in the next five years. So the whole business of insurance, especially auto insurance is on the brink of dramatic change that has been brought upon the industry by data science, machine learning and AI. So a place if you're interested in that is definitely worth considering jumping on top of because it's just going to keep driving from here.

All right. Use case number two, behavioral premium pricing. So an interesting observation about the insurance industry is that 52% of all insurance premiums written in the US are actually health and life insurance business. And that means that these companies in the space of health and life insurance are also actually jumping on the board to incorporate artificial intelligence, machine learning as much as they can.

And the statistics here are actually on their side. So 60% of the population are theoretically open to sharing their data from wearable devices with



insurance companies. So basically that will help insurance companies to better determine a customer's risk factor and adjust premiums to reflect that. And yeah, so they just need to figure out how to use this data in the best way possible. And competitive pressures are pushing them to start doing this sooner and sooner.

Example here is FitSense. FitSense gathers data from smartwatches, mobile phones and other wearables to create detailed customer profiles. The company was acquired by the Cover More insurance group, which uses this data to personalize insurance products and services. The company offers insurance in 14 countries all over the world. So as you can imagine, this is a massive global move that's happening. So if you're interested in the space of health and life insurance, machine learning is the key once again.

All right. Use case number three, policy personalization. So the way that we apply for insurance policies, as we all know, is still very archaic. It's the same way as it used to be a hundreds of years ago or hundred years ago, where you need to apply, we need to like fill in your details, the insurance company will review your details and they'll get back to you. It's a very lengthy process and it costs money and it also, is very like, makes you get impatient as the customer. On other hand, we are seeing artificial intelligence create near instant service, through chatbots and other means in various industries. And so what the suggestion here is that through supervised learning artificial intelligence can quickly learn to do the work of an insurance agent and make those decisions on what policy to give to whom, whether or not to process a claim and things like that.

So the example we have here is Lemonade, which is an innovative insurance company that's making the rounds with its fully automated processes. You interact with a chatbot and get issued a personalized policy in less than two minutes. Another program reviews claims and runs them through 18 anti-fraud algorithms, paying out a simple claims in a matter of seconds. So normally insurance companies take about an average of 11 days to settle the claim. That's 11 days. Here is happening in a matter of



seconds. And they've estimated that it's about a 300,000 times improvement in a metric that customers feel very strongly about. So as you can see, that's AI disrupting both the issuing of insurance policies and processing of claims.

All right, number four, blockchain. Use case number four is blockchain. So one of the biggest challenges in the insurance business is gathering the necessary data to evaluate and process claims.

And once you've submitted your data to your insurance company, they have to share it with another insurance company at least. So there's at least one other party involved, apart you and your insurance company. Probably there's more along the way. And they all use different systems. They all have to talk to each other. So it takes a long time. I have, like in my own life, I had an example where I, once I submitted a claim for like for travel insurance and I thought it was paid. It's like quite a big claim, like about \$6,000. I thought it was paid, but then three, no, two years later, two years later on the dot, two years later, the hospital comes back to me and says, hey, we still haven't received payment from your insurance company. It's ridiculous. Sometimes it's really ridiculous. So yeah, all of that requires a lot of involvement of the parties.

Imagine if there was a blockchain, which is a, an immutable ledger where documents can be shared and these companies can work together, they can all have access to the same blockchain and process these claims much faster. Of course, it would require a lot of coordination between insurance to set this up and get it going. But once it go when this is going and analysis from BCG, the Boston Consulting Group estimates that smart contracts on a blockchain could save insurance companies over \$200 billion, \$200 billion a year in operating costs. That's a huge amount. If you're interested in like putting it into perspective, that would mean about a 13% reduction in their operating ratio, meaning that 13% more of their revenue would be freed up to either further innovate, to pass that those savings back to their customers, make their products cheaper, make their



insurance policies better, whatever else. But that's a massive improvement and all through the power of blockchain.

So there we go. And the example, yes, the example. So example here is Insurwave is a blockchain powered marine hull insurance platform that was launched in 2018 by several companies including Microsoft. As you can see, as we discussed at the start, you can insure pretty much anything including a marine hull. Go figure, who would have thought. So, Insurwave handled over a 1000 commercial vessels and 500.000 automated transactions in its first year. Setting premiums for marine insurance is notoriously complex and Insurwave is designed to ease that by building an audit trail that can never be tampered with. So there you go. That's our example in that use case.

All right, use case number five, complete disruption. This one is not as specific, but something to think about.

So another way, in which AI will affect the insurance business is not directly but indirectly. And it will make us rethink. Our insurance companies will need to rethink even basic questions of decision making of like who's making decisions? Is it a human making decision or is it an AI? And who is accountable? Is that a human accountable? Is it an AI accountable? And which AI is accountable? So the example here is if you're sitting behind a steering wheel of self driving car and in crashes, what is your responsibility? Who's responsibility is it? Should your insurance be used to cover the damage? Or should it, should part of it or, or all of it, or all of the blame rests on the company that developed the AI that's driving the car. Similar situations will start to play out more and more in all walks of life, from damage to property to personal injury.

And of course the job of the data scientist is to make sure that these situations don't happen or happen as rarely as possible, but these questions nevertheless are still going to be present and they will reshape the future of the insurance industry. So if you'd like to be philosophical and



you know, think about the future and concepts like that, then this is something like a real question that is slowly, slowly dawning on the insurance industry, the question of accountability when we have so much artificial intelligence around.

So there we go. Those are our five use cases of data science, AI, machine learning, and in this situation, in this example, we actually have blockchain in the space of insurance. I hope you enjoyed today's podcast. As usual, you can get the notes for this episode at superdatascience.com/268. That's superdatascience.com/268. There you will find the transcript along with all of the links to the research that was used in this episode. If you're interested. And if you enjoyed this episode and you know a data scientist in the space of insurance then forward them this link superdatascience.com/268, share the episodes so that they can get some of these insights too, and maybe that'll spark some cool ideas for them.

On that note, thank you so much for being here today. I look forward to seeing you back here next time and until then, happy analyzing.