

U.T Actuarial Science

Risky Business

Spring 2023 Edition



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AI in Insurance

Written By: Sophia Fente-Damers

Insurance companies have been around for a very long time, providing coverage to individuals and businesses for a variety of risks. As technology continues to advance, these companies have the opportunity to leverage the power of artificial intelligence (AI) to improve their operations and better serve their customers. However, the implementation of AI in insurance should be done with caution and careful consideration to ensure that it is done in an ethical and responsible manner.

I am currently a student at the University of Texas at Austin on the Actuarial Science pathway. This past March I participated in a Case Competition where we were given the duty to create a pricing algorithm for customers of a Renter's Insurance Firm. We were given a deadline of 3 weeks to clean over ten thousand rows of data and create an algorithm. Generative AI could have been a great resource to use during this competition. While I am not saying generative AI should replace human actuaries, I do hope there will still be a need for me when I enter the workforce, it could be a great resource for actuaries to be able to do their job more efficiently. Below are my recommendations of how AI could be implemented into the Insurance domain in an ethical and responsible manner.

One area where AI can make a significant impact is in the underwriting process. Currently, underwriters manually review an applicant's information and history to determine the level of risk and appropriate premium. This process can be time-consuming and prone to errors. By implementing AI, insurance companies can automate the underwriting process, which will reduce costs and increase accuracy. Even the most basic version of AI can analyze data and spot patterns much faster and more frequently compared to a human, according to Lisa Beilfuss. (1) While the article is specifically about stocks and using AI as an advisor when buying and trading stocks, Beilfuss brings up very interesting ideas that can also be applied to insurance. The idea is that in the future these "robo advisors" will not just be tracking stocks and seeing how the prices rise and fall, but also take more active approaches to choosing which stock to invest in or sell. In the insurance world this active approach could be used to help underwriters determine whether or not a client is at a high level of risk. The AI could know more specifics about the person's case and be able to link the details to current events happening in the world, the weather, etc. This would help the underwriter make a more informed decision which would ultimately benefit the insurance company as a whole. AI can analyze vast amounts of data to identify patterns and make predictions, enabling underwriters to make more informed decisions.

The current claims processing system in the insurance industry is notorious for being slow and bureaucratic. It involves customers having to submit lengthy paperwork, provide evidence to support their claim, and wait for weeks or even months for the insurance company to review and approve the claim. This process can be frustrating for customers who are already dealing with the stress of a loss or damage to their property, and can lead to a loss of trust in the insurance company.

Moreover, the manual review process can be prone to errors, leading to delays and further frustration for customers. The implementation of AI in claims processing can revolutionize this process by automating the verification of claims and providing real-time updates to customers. With AI, claims can be processed faster, more accurately, and at a lower cost. By leveraging machine learning algorithms, AI can review and analyze vast amounts of data from various sources, such as photos, videos, and other documents submitted by the customer, as well as external data sources such as weather reports or traffic data, to verify the authenticity of the claim.

However, the implementation of AI in insurance must be done in a responsible and ethical manner. One of the main concerns is the potential for AI to perpetuate or even amplify existing biases. For example, if an AI algorithm is trained on historical data that is biased against certain groups, it may perpetuate that bias in its decision-making. In an article by Edmund L. Andrews, he states that generative AI is about five to ten percent less accurate for lower income and minorities. (2) While someone who does not match that category may not seem to care, the reality is that the data that is training AI presently tends to be biased. To prevent this, insurance companies must ensure that their AI algorithms are trained on diverse and representative data sets and regularly audited to identify and address any biases.

In conclusion, AI has the potential to revolutionize the insurance industry by improving efficiency, reducing costs, and enhancing the customer experience. However, insurance companies must implement AI in a responsible and ethical manner, taking into account the potential for bias and job displacement. By doing so, they can ensure that AI is used to benefit both the company and its customers.



1. Beilfuss, L. (2018, June 20). The Future Robo Adviser: Smart and Ethical? Thanks to artificial intelligence, some think it is possible. Wall Street Journal.
2. Horton, M., Duan, M., & Heaven, W. D. (2020, November 19). How flawed data aggravates inequality in credit. Stanford HAI. Retrieved April 26, 2023, from <https://hai.stanford.edu/news/how-flawed-data-aggravates-inequality-credit>

Interview with Wenting Lu

Advice and Experiences from the President of Actuarial Science Club

Tell me about yourself

I am a Junior studying actuarial science. I love hiking.

What made you decide to major in actuarial science?

I made my decision due to my family's environment. I also enjoy actuarial science as a field of data analysis that allows me to play with data :-)

Can you talk about your experience with passing exams? What have you learned from taking the exams?

I took 3 exams. I use Coaching Actuaries to prepare for exams. I think taking relevant courses at UT is super useful. I would suggest planning the exam for the next exam date after the school course finished.

Can you talk about your experience as a part of ASC?

I really enjoy my time in ASC. It is very informal for me so figure out my career path. I also found a lot of friends here.

Can you talk about your interview experiences? Can you give our students some tips?

I would suggest students to show your confidence and view it as an opportunity to know more about the company. It is more important to find a position where you enjoy the culture and feel valuable rather than just having a job.

Do you have any advice for our students in the actuarial program?

I think the exam path is quite challenging; therefore, it is important to find friends that will encourage you and grow with you. Your friend in college could be your friend forever.

WTW Case Competition

Case competitions are commonly seen as one of the best ways for students to develop practical skills that students will use in the real world. As such, the actuarial science program at The University of Texas at Austin holds a case competition every semester with the express purpose of preparing students for the professional world. This past semester, the actuarial science program held the Fall 2022 Case Competition which was generously sponsored by WTW. For this competition, students thoroughly explored the field of Retirement Consulting.

Recognized for their outstanding presentations, here are the winners!



1st Place Team: Chenhui Yang, Amanda Yin, Wenting Lu, Ian McIntosh (Not Pictured)

Also included in the picture are our WTW volunteer judges: Christy Trang, Jesus flores, Matt Krusz, Dean Crawford, Kayla Berry, Catherine Zhang



2nd Place Team: Rajshree Ganesh, Rachel Nudelman, Emily Lai, Devin Blythe, Luoqun Wang



Honorable Mentions:

Mahek Sansi
Carter Goetz
Kaushal Patel
Diana Klein
Kelli Chang

To gain a better understanding of how participants felt during the competition, Diego Huerta interviewed a member of the first place team, Amanda Yin. Through the interview, Amanda describes how this was her first competition and how valuable the experience was for aspiring actuaries.

Interview with Amanda Yin

Please give a brief introduction of yourself.

I am a freshman mathematics major at UT Austin. While I am not completely sure about what I wish to do in the future, I'm strongly considering becoming an actuary or going to graduate school.

What was your motivation for participating in this case competition?

While talking to various upperclassmen, I learned that case competitions give a good perspective on being an actuary and that a plethora of useful skills can be learned from the competition. Therefore, since I was unsure of what being an actuary consists of or if I wanted to pursue actuarial science, I decided to participate in the case competition.

How would you compare this experience with the previous case competitions you have participated in?

I have never participated in any case competitions before, but I believe that the competition was great for someone in my position. Each team consisted of a combination of less experienced members and more experienced members, which allowed me greater guidance throughout the competition. I would also say that the competition organizers were extremely helpful, as the troubles my team experienced with members dropping out was handled well.

What are some skills you gained in this competition that you think will be helpful for your future as an actuary?

One of the greatest skills I gained in this competition was the ability to collaborate effectively with a team. With the competition lasting just two weeks, I learned how to organize work and communication so that we could most efficiently come up with our presentation and solution. It was important that all members of the team had a good understanding of all aspects of our presentation so that on the day of the presentation, we were able to build off each other's answers to questions and present our proposal effectively.

What did you find was important to have your team win this competition, and what advice would you give to future case comp participants?

Taking multiple scenarios into consideration for our analysis was important in my team's success. This included taking into account different interest rates, levels of inflation, and employees' personal situations. My advice for future case comp participants is to make sure to not just simply assign different parts of the presentation to different team members, and to instead make sure everyone understands all parts of the presentation to ensure that each part of the presentation does not exist isolated from other parts. Ultimately, it is important to give a strong, persuasive presentation, which can be achieved with good teamwork.

What did you like about this format of the case competition, and what did you not like?

I enjoyed that throughout the case competition, we were able to regularly speak with WTW employees and ask questions. It allowed us to gain a better understanding of the competition material, and the skill of knowing what to ask to gain a greater perspective on a problem.

How has the case competition affected your perception of the actuarial field? Has your mindset towards data visualization changed?

My perception of the actuarial field shifted as the competition taught me the field involves more human interaction than I expected. In particular, meeting with clients and presenting your proposal in a simple and understandable way. Therefore, I found that data visualization was extremely useful in allowing us to present data in a simpler and more persuasive way.

-Interviewed by Diego Huerta



Case Competition Reflection

On behalf of the committee, I would first like to express my gratitude to WTW for sponsoring the Fall 2022 Case Competition and allowing our students to develop their professional skills by diving into the realm of actuarial consulting (more specifically, retirement consulting). Likewise, I'd like to thank Professor Alisa Walch, Dr. Shinko Harper, the WTW volunteers, and the rest of the student committee for the time and effort that they put into making the case competition as successful as it is, semester after semester.

During this competition, participants were separated into groups of 5 people, after which they were asked to analyze the state of Megabyte's current retirement plan offerings, a made-up company for the sake of the competition. Students took on the role of retirement consulting actuaries tasked with analyzing the sufficiency of current retirement plan offerings and formulating alternative designs based on student criteria. Given this task, students were given a 2-week deadline to come up with a comprehensive plan to present to the client company's Human Resources team that would allow them to better represent and meet their employee's needs through their pension plan options.

To carry out this analysis, students built and demonstrated their analytical skills by parsing through and examining large amounts of employee data. Through this analysis, teams then created their recommendations and plans which were then presented to our wonderful WTW volunteer judges, putting their presentation skills on display by forming cohesive arguments supported by their own analysis of the situation at hand.

Since this competition focused solely on retirement consulting, students needed to grasp a very solid understanding of the topics at hand, making this competition one of the most analytical to date. The sheer amount of data to be parsed also necessitated a solid understanding of data analysis on behalf of the students. That being said, the competition as a whole, including the team's presentations and analyses, was a great success, with students demonstrating a solid grasp of the subject matter and vast professional growth.

-Diego Huerta

CAS Case Competition

The University of Texas at Austin was honored to host the CAS Predictive Modeling Case Competition this Spring 2023. As a renowned institution with a strong commitment to excellence in education and research, UT Austin takes great pride in providing a platform for aspiring actuaries and data scientists to showcase their skills and creativity through their work in the competition. This year we were happy to extend our platform to students from St. Mary's University who competed along with our longhorns. Through these competitions, the actuarial science program at UT Austin hopes to help foster the next generation of actuaries through their development of relevant industry skills.

Recognized for their outstanding presentations, here are the winners!



1st Place Team: Keily Hart (STM), Kelsey Chorath (STM), Logan Gier, Nhu Nguyen, Austin Yeh, Kuan-Wei Huang

Also included in the picture are our CAS volunteer judges: Norah Barnes Bacho, Jake Akstins, Samantha (Hart) Maxam, John Irving, Charles Zhu



2nd Place Team: Lucy Adelson, Isaiah Armendarez, Andy Trinh, Sophia Fente-Damers, Treyton Selissen, Katie Wrigley



Honorable Mentions (Teams):

Purple Team: Alex Hoke, Raul Trujillo-Pena, Nicole Castella Falkenberg, Kelly Liu, Duaily Lopez-Reyes

Yellow Team: Maroun Harb (STM), Jayson Folsom (STM), Vicente Mainez

Honorable Mentions (Individual):

Kai Williams

To better grasp the value of the case competition to aspiring actuaries, Diego Huerta interviewed two first time participants: Sophia Fente-Damers and Duaily Lopez-Reyes. Through their testimonials, they described how valuable the competition was to them as actuarial candidates.

Interview with Sophia Fente-Damers

Please give a brief introduction of yourself.

Hello my name is Sophia Fente-Damers I am a rising Sophomore at UT Austin. I was actually originally a nursing student in the College of Nursing but just switched to Math in CNS. I was born in Houston, but I have moved around my whole life and now I currently live in Madrid.

What was your motivation for participating in this case competition?

I was in the process of figuring out what I wanted to do with a math degree and while interviewing for Gamma Iota Sigma the president mentioned the case competition, so I signed up. I understood it as a great opportunity to make sure I was truly interested in the Actuarial Field before I became fully committed to becoming an Actuary.

What are some skills you gained during the competition that have been useful during your internship? Do you think they'll keep aiding you on your actuarial journey?

The competition was a great opportunity to pick up on terminology that you wouldn't necessarily learn in detail about in classes. During my interview for my internship someone asked me about the pricing model we chose to employ. Thanks to my experience within the case competition I was not only able to explain in detail the pricing model we chose and how it applied to our data that was given, but I was also able to explain how it was competitive in today's market. The case competition is what I truly believe gave me a leg up on my competitors when interviewing for internships. It was a real experience that forced me to use skills that actuaries use on a daily basis.

What did you find was important to perform well as a team, and what advice would you give to future case comp participants?

For my team only one person had ever actually participated in a case competition before so the entire experience was new for the majority of the team. What we quickly realized was that everyone had their strengths and weaknesses to what they could contribute to the team. We had one member that was extremely experienced in R coding so he took over creating the models and gave us all the chance to learn how to make our own versions of the models. My advice to future case competition participants would be to figure out everyone's strengths and weaknesses very early on.

What were your favorite and least favorite parts of the competition?

My favorite part of the competition would definitely be working with my team and having presented a finished product to a group of professionals. It also was really exciting when we placed second overall! I honestly could not give any least favorite parts of the competition. We were given a lot of opportunities to network and ask professionals their honest opinions about the field.

How did the case competition affect your perception of the actuarial field?

It made me excited to start the journey of completing the exams. Being an actuary can mean so many different things based on what company you work for and I think the flexibility to go down so many different avenues is extremely appealing. It did make me very nervous for Exam P! Everyone was talking about how they did not pass the first time they took it. Overall I would strongly recommend participating in this competition. Not only for the experience, but also it gives you the opportunity to speak to other people interested in the same major. Choosing to go down the actuarial path is not an easy one, but being surrounded by people taking the same exams or classes really helps since it gives you people to lean on for guidance and support.

Interview with Duaily Lopez-Reyes

Please give a brief introduction of yourself.

My name's Duaily, I'm from Puerto Rico and I'm a Junior actuarial science student here at UT Austin.

What was your motivation for participating in this case competition?

I wanted to experience what actuarial science was in practice, something I believe we do not truly get a grasp of through our classes.

What are some skills you gained during the competition that have been useful during your internship? Do you think they'll keep aiding you on your actuarial journey?

I learned about Generalized Linear Models, and a general idea of P&C insurance pricing which has translated into valuable knowledge for my current Life and Health insurance internship. Through the case study, I was able to learn some foundational pieces of insurance that will be important to me my whole career!

What were some obstacles you faced during the competition, and what advice would you give to future case comp participants?

The team and I struggled in having a fully balanced presentation between the technical and business sides of the task at hand. The most important advice I can give would be to communicate with your team and look for others that may be able to help you, even in very small ways.

What was your most valuable takeaway from the case competition?

Insurance in practice can be very tricky, and there are many approaches that are all viable, making insurance an open ended mixture of finance and math.

How did the case competition affect your perception of the actuarial field?

My perception of the actuarial field changed through the case study in that, before the case study, I thought the actuarial field was very cut throat. After the case study, however, I realized actuaries are supportive people and will gladly help others succeed. The sacrifice to become an actuary is not minute so it's nice to know you'll be surrounded by people who want to see you win!

-Interviewed by Diego Huerta

Case Competition Reflection

On behalf of the committee, I would first like to express my gratitude to the CAS and its members for their part in making the Spring 2023 Case Competition a success. From sponsoring the competition to providing the case materials and even acting as volunteers and judges, they truly allowed our students to showcase and develop their professional skills. Likewise, I'd like to wholeheartedly thank Professor Alisa Walch, Dr. Shinko Harper, and the rest of the student committee for being the backbone that allows our case competitions to be as successful as they are. I truly appreciate everyone's time and effort as they are what allow the competitions to flourish.

This semester's case competition aimed to showcase the potential of predictive analytics in the insurance industry and provide students with hands-on experience in tackling real-world actuarial challenges. Students were tasked with developing a pricing strategy for current and future Dormitory Insurance business for ABG Insurance, a mock company created for the purpose of the competition. Divided into teams, students were asked to analyze market conditions, understand customer behavior, and devise an optimal pricing strategy. Teams leveraged historical data and statistical techniques to predict customer behavior and identify risk patterns. By doing so, they crafted pricing strategies that aligned with the target market and offered competitive advantage.

Throughout the competition, students showcased their expertise in data analysis, statistical modeling, and decision-making. They incorporated various predictive models centered around regression analysis to gain insights into customer preferences and anticipate potential risks. The competition also highlighted the importance of teamwork, critical thinking, and effective communication. Participants collaborated intensively, pooling their skills and knowledge to develop comprehensive strategies. They presented their findings and recommendations to a panel of CAS judges who acted as the mock company's executive team. This allowed students to display both their collaborative and presentation skills by forming a comprehensive pricing strategy and presenting it as a cohesive team.

As the part of the student committee, I was able to sit in for some of the student presentations and was awed by the level of professionalism and technical prowess displayed by the teams. The competition provided students with a unique opportunity to apply their actuarial skills in a practical setting, an opportunity that will undoubtedly benefit their future careers as they develop the fundamental skills that will support them on the actuarial path.

-Diego Huerta

Fall 2022 Actuarial Scholarship Honor Roll

Endowed Scholarships

Mark and Pamela Callahan Presidential Scholarship in Actuarial Studies

Joie Li

James Morris Dial Endowed Scholarship in Actuarial Studies

Emily Pietersz

Yixin He

Bruce Fuller Endowed Presidential Scholarship in Actuarial Studies

Wenting Zhang

Tzu-Yu (Angela) Chen

Kim Lee Endowed Scholarship in Actuarial Studies (Through Texas Exes)

Yixin He

John S. Rudd Jr. Scholarships in Actuarial Studies

George Gu

Eugene Wisdom Memorial Scholarship in Actuarial Studies

Diego Huerta Gutierrez

Recurring Scholarships

Actuarial Club of the Southwest

Kyuwon Han

Ruiyi Hao

Chenhui Yang

Rudd and Wisdom Actuarial Studies Scholarships

Devin Blythe

Kysah Noor Khokher

Kevin Lips

Tomas John Moler

Anisha Sneha Navendra

Austin Yeh

Southwest Actuarial Forum

Yifan Yu

Spring 2023 Actuarial Scholarship Honor Roll

Endowed Scholarships

Actuarial Alumni Endowed Scholarship in Actuarial Studies

Devin F. Blythe
Wenting Lu

Mark and Pamela Callahan Presidential Scholarship in Actuarial Studies

Joie Li

James Morris Dial Endowed Scholarship in Actuarial Studies

Emily Pietersz
Yixin He

Jim and Ann Daniel Endowed Scholarship in Actuarial Studies

Kevin Peter Lips
Tuan Huu Anh Nguyen

Bruce Fuller Endowed Presidential Scholarship in Actuarial Studies

Wenting Zhang
Tzu-Yu (Angela) Chen

Kim Lee Endowed Scholarship in Actuarial Studies (Through Texas Exes)

Yixin He

CJ Liu & Family Endowed Scholarship in Actuarial Studies

Chenhui Yang

John S. Rudd Jr. Scholarships in Actuarial Studies

George Gu

Eugene Wisdom Memorial Scholarship in Actuarial Studies

Diego Huerta Gutierrez

Recurring Scholarships

Rudd and Wisdom Actuarial Studies Scholarships

Steven Chow
Kyuwon Han
Emily Lai
Andrew Mao
Cassidy Catherine Tennant
Katherine Elizabeth Wrigley
Yifan William Yu

Southwest Actuarial Forum

Kysah Noor Khokher

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