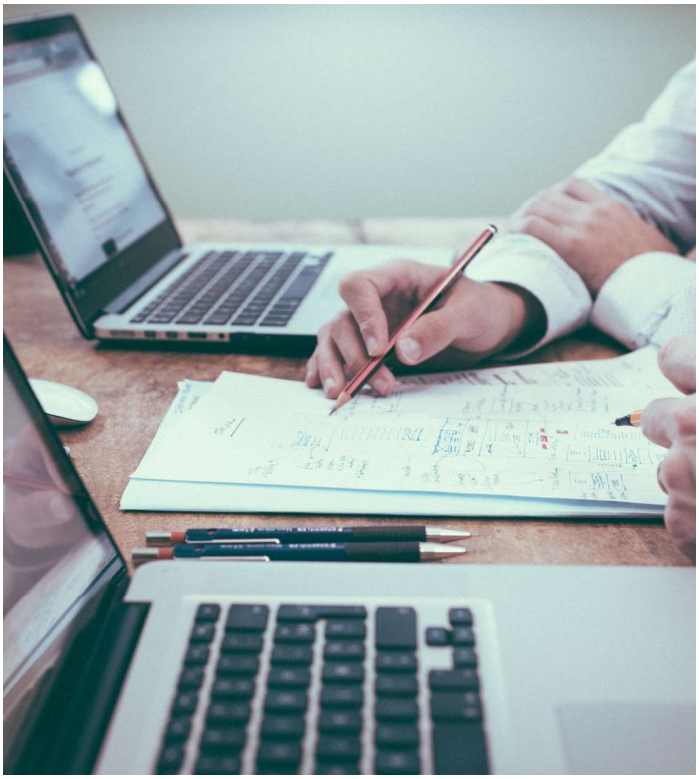
Risky Business



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Automated Vehicles and Actuarial Science

Automated vehicles are becoming more widespread, researched, and funded. President Trump signed the Consolidated Appropriations Act into law on March 23, 2018, directing "the U.S. Department of Transportation (DOT) to conduct research on the development of automated vehicles and provide necessary funding". As automated vehicles become available to the general public, there are many questions to be considered. The rise of automated vehicles will not only change the way humans live, but will also have an important impact on the actuarial science field.

Driverless cars offer many benefits that make them so appealing. Serious crashes threaten the lives of too many Americans each year; "94% of serious crashes are due to human error". With automated vehicles, the amount of human error is reduced. The traffic jams that result from the crashes will also be reduced, allowing Americans to spend less time on the road. Not only do crashes destroy lives and create traffic jams, but they also hurt the economy. A study performed by the National Highway Traffic Safety Administration (NHTSA) revealed that "motor vehicle crashes in 2010 cost $242 billion in economic activity, including $57.6 billion in lost workplace productivity,
and $594 billion due to loss of life and decreased quality of life due to injuries". In addition, Americans with disabilities who are unable to drive could potentially drive with automated vehicles.

In order to enjoy the benefits that automated vehicles offer, the vehicles must be functioning properly. On March 18, 2018, Elaine Herzberg was the first pedestrian to be killed by a self-driving car. The vehicle failed to detect the pedestrian, and the backup driver failed to react in time. The automated car was able to detect objects around it through sound waves and laser beams. However, humans do not echo or reflect light well. Humans also do not move predictably, which can make it difficult for the

automated vehicles to recognize pedestrian movements. These downfalls need to be considered in the further development of automated vehicles. In addition, "automation complacency" is a serious threat to the implementation of automated vehicles. Automation complacency occurs when humans rely too strongly on an automated vehicle because it is "supposed" to drive for them. The National Transportation Safety Board's report on the death of Elaine Herzberg revealed that automation complacency was a crucial factor in the pedestrian's death. The automated vehicle did detect the pedestrian 5.6 seconds before the crash, but "it never accurately classified her as a pedestrian or predicted her path." The backup driver in the car was looking at her phone before the accident, relying on the automated vehicle to self-drive, and only looked up at the road one second before the collision. Although the driver attempted to steer away from the pedestrian 0.2 seconds before the collision, she was ultimately unable to prevent the car from crashing into and killing the pedestrian.

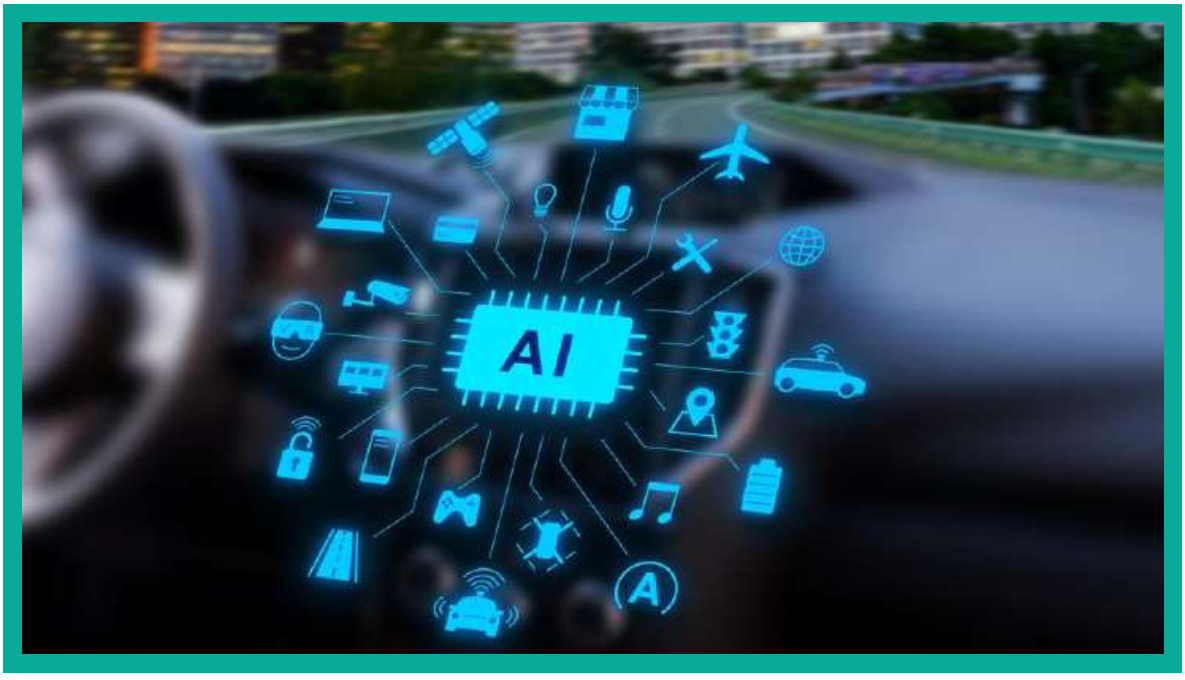
The wide range of automation seen in automated vehicles, from necessary driver assistance to full automation, also presents problems. With driver assistance, there are some helpful features, but the driver controls the car. Partial automation has automated functions but still requires the driver to be alert and aware of the surroundings. In conditional automation, even though most features are automated,

the driver is still responsible for taking control of the car at any moment. In high or full automation, the driver could have the opportunity to control the car, but the car is completely automated. This range of automation poses a problem: people could easily have multiple cars with different levels of automation. In one household, there could be a driver-assisted car, a partially automated car, and a fully automated car; "the median vehicle has been on the road more than 11 years". Keeping track of each vehicle's automation level could be challenging.

Liability issues with automated vehicles present insurance companies with a complicated question: If an accident occurs, who is responsible? As cars are shifting from driver-assisted to partially automated, it will be difficult to determine who is at fault for any accident. Insurers will need detailed data in order to analyze the causes. It is most likely that as long as the driver bears some responsibility in remaining alert to the environment, insurance companies will view the driver at least partially at fault. Alexander Timm, a CAS Fellow and founder of Root Insurance, "suggested that within 10 years the insurance industry may contract. Insurers will move to other lines of business". If this were to happen, actuarial science might become less appealing to some college students. However, with many other types of actuarial pathways, such as health insurance or life insurance, aspiring actuaries would still have many roles to fill. Actuaries will also play a key role in transforming current models to accurately depict changes due to the rise of automated vehicles. For instance, if accidents and losses decrease as a result of automated vehicles, then premiums on insurance could potentially decrease. The Casualty Actuarial Society's Automated Vehicles Task Force reported that it will most likely be several years before better-performing automated vehicles would lead to lowered premium costs. The Task Force also noted that collaboration between insurers and manufacturers would be necessary to analyze evidence and determine new pricing.

The development of automated vehicles promises safer cars, fewer accidents, and less traffic time. With these benefits come many challenges. Americans will have to adjust to different levels of automated vehicles, learning and remembering the automated features of each car they own. As automated vehicles become more prevalent, actuaries and insurance companies must determine how to move forward through new data analysis and pricing policies. While the actuarial science field will experience changes because of automated vehicles, this field will still require the innovative and problem-solving spirit of aspiring actuaries.

-Caroline Mott

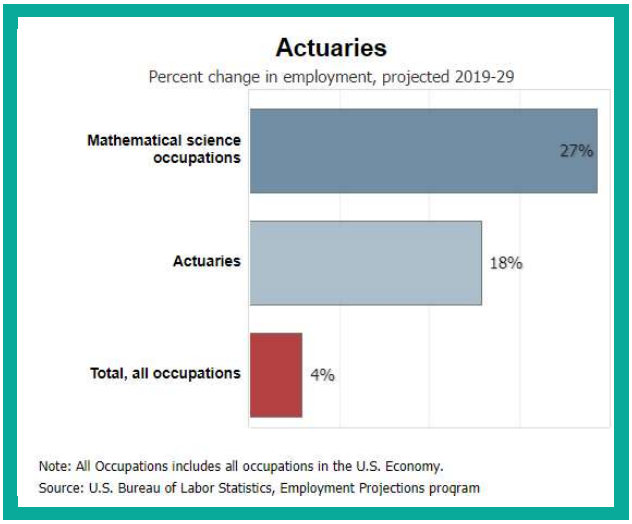


Non-Traditional Actuarial Roles

There is a great variety of positions the field of actuarial science has to offer. However, what if none of those fit you? A structured 40-hour work week doesn't appeal very much to you. You're the type of person who seeks a plot twist in a telenovela or thrives with a hint of flavor in life. Like me, you find thrill and a sense of fulfillment in subjects that are uncommon to everyone's eyes. Perhaps, the following paragraphs can enlighten you.

Due to the recent technological evolution caused by the Digital Age, the roles of actuaries have also changed. The multifaceted tech giant, Google, has branches in almost all industries you can count in your hand. You may even need to use your toes for that matter. That's when our expertise as aspiring actuaries becomes valuable to an employer. Actuaries become a critical asset to them as they explore these new avenues, most likely full of unknowns. Stay with me for a second here. Imagine yourself accidentally dropping a water glass. How many of you have done it? Come on, I know I was not the only four-year old to have cried over this. See, as you go into that instinctive problem-solving mode, that voice in your head would automatically scream, "WEAR YOUR SLIPPERS!" Granted, I did grow up in an Asian household so that voice may not even be yours but your mother's. Nobody wants to walk all over shards of glass knowing it will only do harm. To reduce the risk of you harming yourself, an assessment needs to be made and a solution presented, hence, the perks of house-slippers. These types of situations will mirror those in the technical world.

For example, Google has been employing more actuaries to reconfigure their approach to product development and evaluation of the market. In the aspect of product development, actuaries determine the cost of how much to sell the new product for, in addition to identifying features that the market currently demands. Additionally, Uber Technologies, Inc., more commonly known as Uber, has comparably



been employing more actuaries, as well. Brand new challenges in the company will be most likely found in ride-sharing accidents and car automation liabilities. Furthermore, this exponential rise has emerged with relatively limited information found in the industry. From 2014 to 2018, there have been reportedly 38 injuries related to self-automated vehicles with one casualty in 2018. According to Chris Nyce, FCAS, of KPMG, some non-traditional actuaries "work to set up insurance programs that drivers can access, both in the US and other countries. Other non-traditional work can be quite different. In many cases applying knowledge of advanced analytics and machine learning to solve business challenges. So important for students to demonstrate flexibility and innovation abilities, and ask questions about projects actuaries are working on when talking to a potential employer." With our communities shifting to be more technology-involved, businesses will need help tackling these imminent issues.

One of the most significant skills for an actuary to possess is the ability to communicate well with their clients and colleagues. These imperative communication skills enable a smoother adjustment of an actuary, such as a Life Insurance Actuary, to a

non-traditional role. That being said, if the actuary wishes to pursue more into the field of technology, he or she will be at a deficit state. Communication prowess is mandatory in Silicon Valley in order to increase your influence and expand your professional connections. To sell yourself, you must be able to think on your feet as if it flows naturally out of you. Despite all the changes produced by technological advancements in the roles of actuaries, a prevalent skill set remains more essential for an actuary: communication efficiency. Adjustments are never easy, coming from someone who migrated into an entirely different country at the age of nine. As always, we will be presented with challenges.

Those who wish to pursue a non-traditional role of an actuary may run into a myriad of obstacles. For instance, there is no guarantee of study support from the workspace environment or the company. Personally, I am more successful when in collaboration with my peers and classmates. Even after college, we still may need a study buddy to some degree. The support typically provided by a company with a well-developed actuarial program includes exam cost assistance which accumulates as you proceed to take more actuarial exams. If you haven't come across the webpage of that lists the cost of each exam…I would like to warn you not to drink coffee prior to, otherwise, your heart may jump out of your body. Back to a more serious note, one must pass most, if not all, of actuarial exams, as the non-traditional job requires the majority of your time. Of course, this would depend on what role in the company it would encompass. Having said that, you must also consider the flexibility in the work hours you are required. It is highly likely that you will end up with insufficient time to study for your exams. Most actuaries advise finishing all of the exams prior to transitioning into this particular profession. Carving out an exam time every day may be improbable, especially if your job requires some traveling and grueling hours. If you are planning to settle down and start a family, you may want to keep in mind that work-life balance may not be guaranteed. In terms of benefits, incentives and great compensation may not be attained through that company. Oftentimes, insurance companies closely-related to actuarial work offer a healthcare package or a discount in the company. Those incentives will not come with non-traditional roles unless the corporation has an established actuarial department which isn't likely since they are also novel to this sort of employment. Despite those heavy points to consider, Mr. Nyce, FCAS, has brought attention to the most important detail of a job. "The main challenge is a fun one, in that challenges actuaries are addressing can be unique and require innovation. That is there may not be a standard method to draw on, but instead innovative application of broad actuarial skills."

Finding my personal interests has been one of the most challenging problems that I have and still encounter. Oftentimes, it can be discouraging when nothing seems to fit; however, therein lies hope and beauty somewhere. In terms of job outlook, the United States Bureau of Labor Statistics projects a rate of 18% growth in actuarial employment, driven by new, emerging risks. There will be a place for you.

-Elyce Burce

Case Competition Winners

Case Competitions are a great part of being an actuarial science student at UT. **The Spring 2021 Case Competition** was sponsored by Cigna, in which the participants explored a case related to Employer Sponsored Healthcare. **Here are the winners!**

1st place team - Chance McCoy, Devin Blythe, Li (Annie) Ji, Danielle Deans, and Sarah Sudheer
Also pictured are our volunteer judges Harsh Mota of Cigna, Rachel Hoffman of Cigna, Samantha Hart of Cigna, Dr. Milica Cudina of UT, Roberto Perez of The Hartford/OLA, and Jake Stevens of Aon

2nd place team - George Gu, Maxwell Purcell, Yehyun (Sally) Kyong, Ali Khowaja, and Caroline Mott

Honorable Mention - Carina Guerrero Fabian

Additionally, I was able to interview a member of the winning team, Devin Blythe, and get his experience with the competition, as well as get to know how his team was able to win the whole competition:

Interview with Devin Blythe

1. Please give a brief introduction of yourself.

Answer: My name is Devin Blythe and I am a sophomore Actuarial Science major in the College of Natural Sciences at UT Austin. I had previously competed in one case competition which was the Casualty Actuarial Society/Gamma Iota Sigma Case Competition in Spring of 2020.

2. What was your motivation in participating in this case competition?

Answer: I wanted to have a more hands on learning experience regarding what a health actuary does and about actuarial science in general. I wanted to work with other actuarial science students instead of just working independently as so many college assignments are completed. Another motivation for me was the active nature of learning that these competitions provide. When studying for an actuarial exam you don't get to have as much fun as when you are working on a case competition.

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

Answer: For a completely virtual competition things were fairly smooth. It was convenient for my team to meet because we would meet on zoom and would not have to meet at the same place at certain times. Networking was not as personal as it had been in previous face to face case competitions. This being a health insurance case competition, it was quite different than the casualty competition I had previously competed in. I did not know much about health insurance before the competition and frankly I wasn't very interested in the health side of actuarial science. But, throughout the competition I became much more fascinated by the health insurance industry than I had been before.

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

Answer: I learned much more about how to manipulate and read data from excel. I also gained a basic understanding of how health insurance is priced which will be helpful as I become a young adult even if I didn't become a health actuary, since I will need health insurance. This competition helped me to refine my presentation and public speaking skills. I also was able to improve my communication skills in general when meeting with my team and exploring the task at hand.

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

Answer: Thinking logically and outside of the box is key to differentiating your team from others. Being creative in all aspects of our project was the most important piece of our presentation. We were creative in implementing activities, pricing, and benefits of the insurance plan. The most important advice I would give to future case competition participants is to ask questions and really try to understand the topic you are given on a deep level. Having a deep understanding of the task at hand will be helpful when you are building your plan but also when you are presenting the plan to the judges.

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

Answer: I would have liked a more in-depth kickoff event with clearer instructions. But, in the end I believe that it was the vague instructions that allowed my team to be more creative in our approach. I liked that we presented the final projects to a judging panel of actual health actuaries. The judges gave very helpful feedback and knowing that actuaries working in the industry are interested in the policies you create is reassuring that I am on the right career path!

-Interviewed by Anshuman Sharda

Additionally, Ali Dhuka, the student committee chair, wrote an insightful piece on the unfolding of the whole event:

Case Competition Reflection

Thank you to Cigna for sponsoring our Spring 2021 Case Competition on Health Care plans for company employees as well as the influence of COVID 19 to policies. The competition would not have been possible without the help of Prof. Alisa Walch, Dr. Shinko Harper, Cigna Advisors, the Student Committee, and the fantastic panel of Judges. Congratulations to the first-place team: Devin Blythe, Danielle Deans, Sarah Sudheer, Li Ji, Chance McCoy and the second-place team: Maxwell Purcell, Caroline Mott, Sally Kyong, Ali Khowaja, George Gu. Congratulations also to Carina Guerrero Fabian who received an Honorable Mention for her performance during her team's presentation. Their hard work, teamwork, and determination reflected the best of UT Austin's actuarial program.

To many students, the competition was their first exposure to the Health Care industry as well as to the actuary profession. Also, the competition connected students with their peers to learn, advise, and network with each other. One student describes it as: "I really liked how I got to meet other people in the same major and to collaborate with them. We were able to relate to similar things, and we also discussed about ways to develop skills for our future career". Additionally, the competition provided many students with the opportunity to learn the real-life application of concepts they learn in class. Furthermore, it allowed students to practice their technical skills and soft skills that are sought after in the actuary profession. As another student described: "My favorite part of the Case Competition was that I learned more about the Actuary field and get a sense of what I will be doing in the future". Altogether, the students were provided the opportunity to use and apply their skills in a health care insurance industry that is influenced by COVID 19.

"I really liked how I got to meet other people in the same major and to collaborate with them. We were able to relate to similar things, and we also discussed about ways to develop skills for our future career".

"My favorite part of the Case Competition was that I learned more about the Actuary field and get a sense of what I will be doing in the future".

Specifically, the Cigna Case Competition provided an insight into uncertainty of policies in unforeseen events for example COVID 19. The students were tasked with finding risks the insured will face and updating a Preferred Provider Organization plan for the 2021 calendar year. Also, they were to create a different plan and justify the reason for choosing this plan. For both plans, the students found the premium and determined the course of action the insured should take. Furthermore, the students created sensitivity tests to see the influence on premium based on the changes to the target variables. With all the data and information, the students were given, they organized and presented the data along with their policy plan to the panel of judges. After the presentations, students were given constructive criticism to their policies and the opportunity to network with judges.

In the end, the competition gave students the opportunity to talk with professionals and understand the work they do. Also, a majority of the students who participated noted they would participate in another case study. Altogether the competition provided the chance for UT students to learn about the actuary profession by giving them experience in practical actuarial work and, hopefully, the competition made a lasting impression on them.

-Ali Dhuka

The case competition sponsored by Cigna at UT wasn't the only competition happening around,as our very own Thomas Moler was invited to represent UT on the Casualty Actuarial Society's team at the 13th annual Travelers case competition. Here is an interview with him:

Interview with Thomas Moler

1. Please give a brief introduction of yourself (UT school year, major, previous case competitions participated in, etc.)

Answer: Hello! My name is Thomas Moler and I'm a Sophomore Actuarial Science major. My experiences in the actuarial field so far include passing Exam P earlier this year, and being a member of the winning team of the UT CAS/GIS Spring 2020 Case Competition.

2. Could you briefly describe the overall format of the competition and your team's role?

Answer: Just recently, I competed in the Travelers Insurance Case Competition. I was on a team representing CAS, with five teammates who were each from a different college. We were tasked with calculating reserves for a made-up auto insurance company. This meant we had to determine how much money would be needed to cover the future cost of claims made during a given time. After finding our answers, we presented our results to the judges and explained how we arrived at them. There were four other teams competing, each representing a college or a different actuarial organization, who would all go through the same process. I'm happy to say my team ended up winning!

3. How did you learn of this opportunity, and what motivated you to participate in it?

Answer: I heard about this opportunity from an email from Prof Walch. She was looking for a Freshman or Sophomore actuarial student to

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represent UT as a member of the CAS team in the Travelers Insurance Case Competition. I made sure to reply as quickly as I could! I definitely wanted to compete because it would give me more experience in the property and casualty field, which is the actuarial field I am most interested in. Also, it would be a great opportunity to network with professionals in the industry and with actuarial students at other universities.

4. How would you compare/contrast this competition with any other case competitions you have participated in in the past (including the competitions you participated in at UT)?

Answer: This competition was similar to the one I had previously participated in at UT, as we would be judged on a presentation that explained the solution our team found to the given task. That said, many parts of the Travelers competition were different. My team only had four hours to find our answers and make our presentation instead of the weeks to prepare that I had enjoyed for the UT competition. Also, the subject matter was very different as the UT competition was to design a smartphone warranty product, while the Travelers competition was to calculate reserves. The final key difference was that I was working with students from other universities over Zoom, instead of working face to face with fellow UT students. This was challenging, but also rewarding as I really enjoyed meeting my teammates and working with them.

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

Answer: Before this competition, I didn't really know what reserving was or how it worked. The explanations in the given reading materials helped quite a bit. That said, what really helped me to understand the concept was the discussions my teammates and I had in the process of solving the problem we had been given. This was a valuable reminder that working with a team benefits all members, and teaches everyone new things. Also, the process of developing and giving a presentation was very helpful. The more practice you can get in giving presentations, the better!

6. What skills/knowledge did you bring that helped you and your team succeed in this competition?

Answer: I used my previous experience in case competitions to explain to my teammates what they could expect, and also what things worked for me in the past. My main piece of advice was to have a confident, concise explanation for decisions you make, and to plan your presentation as much as possible to make sure everything included is important and relevant. I also sought to share my understanding of the actuarial concepts we were being introduced to. This would help my teammates and I understand and better find an answer to the case. I tried to help more with the technical aspects of this case than I had in my previous competition now that I was no longer a Freshman and had some actuarial courses completed. I tried my best, and got lucky with awesome teammates who I could work well with and did great work.

-Interviewed by Anshuman Sharda

FALL 2020 Actuarial Scholarship Honor Roll

Endowed Scholarships

Mark and Pamela Callahan Presidential Scholarship in Actuarial Studies

Robert Deacon

James Morris Dial Endowed Scholarship in Actuarial Studies

Stefani Barré

Bruce Fuller Endowed Presidential Scholarship in Actuarial Studies

Heewon Huh
Arihant Bohara

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

Sahithi Adduri

John S. Rudd Jr. Scholarships in Actuarial Studies

Sharon Zang

Eugene Wisdom Memorial Scholarship in Actuarial Studies

Myron Yang

Recurring Scholarships

Actuarial Club of the Southwest

Reed Hongbin Wu
Anshuman Sharda

New Era Life Insurance Actuarial Scholarships

Axel Samaniego
BinJie Duan

Rudd and Wisdom Actuarial Studies Scholarships

Nicholas Abraham
Adrianna Andrade
Beth Herold
Eduardo Garcia
Hana Ha-Eun Park
Fornia Van
Elena Zhang

Southwest Actuarial Forum

Carina Fabian

USAA Life Actuarial Scholarship

Li (Annie) Ji
Ji Kim
Caroline Mott
Duy Nguyen

USAA Property and Casualty Actuarial Scholarship

Matthew Deniz

SPRING 2021 Actuarial Scholarship Honor Roll

Endowed Scholarships

Actuarial Alumni Endowed Scholarship in Actuarial Studies

BingJie Duan
Austin Riis-Due
Anshuman Sharda

Mark and Pamela Callahan Presidential Scholarship in Actuarial Studies

Robert Deacon

Jim and Ann Daniel Endowed Scholarship in Actuarial Studies

Yidi Guo
Yixin He

James Morris Dial Endowed Scholarship in Actuarial Studies

Stefani Barré

Bruce Fuller Endowed Presidential Scholarship in Actuarial Studies

Arihant Bohara
Heewon Huh

John S. Rudd Jr. Scholarships in Actuarial Studies

Sharon Zang

Eugene Wisdom Memorial Scholarship in Actuarial Studies

Myran Yang

Scholarship Honoring Jim Daniel

Stefani Barré
Ali Muhammad Khowaja
Thomas Moler
Bingzan Ou
Elena Zhang

Recurring Scholarships

Actuarial Club of the Southwest

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New Era Life Insurance Actuarial Scholarships

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Southwest Actuarial Forum

Eduardo Garcia

USAA Life Actuarial Scholarship

Fornia Van
Hongbin Wu

USAA Property and Casualty Actuarial Scholarship

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