



Volunteer Experience With the SOA Actuarial Innovation and Technology Repository

By Yu Luo

Actuarial science—a highly competitive field—requires both academic education, tested by Society of Actuaries (SOA) exams, and practical experience. As an international undergraduate student, I've always felt distant from the real world and wondered how real actuaries deal with all these functions and probabilities; we use only calculators during the classes and exams. That's why I have tried this year to find all kinds of volunteer experiences. My university offered me the great opportunity to learn actuarial science, but I needed to find my own pathway to accumulate more professional experience.

I applied to volunteer on the SOA Actuarial Innovation and Technology Repository Team. Fortunately, I was accepted about one month later. My teammate and I had our first phone meeting at the end of February. The main task of this team was to look for any information (e.g., articles, videos, reports) that introduces the latest technology improvements in the actuarial field in 14 different sections: artificial intelligence, autonomous vehicles, big data solutions, blockchain, cloud computing, cyber risk, data analytic tools, InsurTech, machine learning, predictive analysis, telematics, usage-based insurance, virtual reality, and wearable devices. Each person was assigned one or more sections based on the individual's own interests to condense into a short abstract. I chose artificial intelligence (AI).

I was delighted by this choice since AI has become a very popular technology in recent years. The relationship between actuarial science and AI was intriguing to me even before I dug into the topic. Students like me sometimes feel stressed when performing calculations in our homework, which is not as difficult as what those senior actuaries experience in their real-life jobs.



Could AI bring more convenience and accuracy into this field? If so, when? Which processes of an actuary's daily work could be more influenced by this technology? With so many questions in my head, I started my search on the internet.

According to PwC,¹ AI has already been applied in many fields to minimize the distance between human and machine—for example, RIVA Machine, a robot that fills prescriptions; and DoNotPay, a bot that appeals parking tickets for free; and Ayanah, whose AI-powered credit scoring service aids unbanked Filipinos who otherwise would not have a credit score. AI functions as an equalizer to lessen the gap among the different societies. What surprised me was not AI's identity as a new technology but its social function. Links between technology and social equality were something I'd never considered before.

From reports about AI introduction, it seems that more and more fields have been influenced by AI. What about the actuarial science field? I believe that AI does not currently affect our profession that much, but most of the papers I read indicated that it is highly likely to in the future. Mainly, with the assistance of AI, the purpose of insurance will shift from “detect and re-

pair” to “predict and prevent.”² The capacity of solving policies will be greatly increased in the near future by AI methods like automated machine learning and robotic process automation, which deliver consistent, accurate and informed decisions in underwriting, pricing and claims.³ Therefore, the insurance model can be enhanced and the cost of correlated process can be saved.

While reading these articles, I was reminded of the new SOA Predictive Analytics Exam. In the introduction, this exam serves as a continuation of the Statistics for Risk Modeling Exam. More computational tools will be emphasized in this exam. The transition to prediction and prevention has also snuck into the requirements for future actuaries.

As one of this pack, I wonder what the future holds for this profession. Will this field still be popular or, more pessimistically, even exist in 10, 20 or 30 years? Have I made the right call for my career? The evolution of current trends and technology affects every profession. During my volunteer experience, I was pleased to find my concern was also considered by so many senior actuaries. What’s more, I am more aware of future challenges. From my section, the cooperation between machine and human will definitely be—or has already currently become—one of the requirements for us, too.

The brief presentation for this program has been updated on the SOA website.⁴ I do hope that more future actuaries will be involved in this program. It exposes a more practical world,

not one limited by academic lectures and exam manuals. The actuarial industry has always evolved. Should we follow the pathway of these AI evolutions to be more prepared for the future? ■



Yu Luo is currently an actuarial mathematics senior in Penn State University and can be reached at rainieluo2016@gmail.com.

ENDNOTES

- 1 Rao, Anand, and Matthew Lieberman. Bot.me: How Artificial Intelligence is Pushing Man and Machine Closer Together. *PwC.com*, April 2017, <https://www.pwc.com/us/en/services/consulting/library/consumer-intelligence-series/artificial-intelligence.html> (accessed September 15, 2019).
- 2 Balasubramanian, Ramnath, Ari Libarikian, and Doug McElhaney. Insurance 2030—The Impact of AI on the Future of Insurance. *McKinsey.com*, April 2018, <https://www.mckinsey.com/industries/financial-services/our-insights/insurance-2030-the-impact-of-ai-on-the-future-of-insurance> (accessed September 15, 2019).
- 3 Bishop, Day, and David Ovenden. Commercial Insurers Primed for Intelligent Automation. *WillisTowersWatson.com*, June 29 2018, <https://www.willistowerswatson.com/en-US/insights/2018/06/emphasis-commercial-insurers-primed-for-intelligent-automation> (accessed September 15, 2019).
- 4 See <https://www.soa.org/programs/act-innov-tech/>.



Email Strategies

By Melanie Dunn

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Pause for a moment and imagine a modern company that doesn't use email. You blanked, right? Emails are to the business world what cars are to a road trip. We can't get anywhere without them.

Actuaries, especially those who manage teams, may get more than 100 emails every day. At 60 seconds per email, that's nearly two hours every day spent just reading emails! And because the intuitive way that people think and converse often doesn't translate to an effective email, many actuaries experience challenges seeking to "level up" their email-writing skills.

This article offers six specific strategies for better email communication. Before hitting send on the email, reread it and ask yourself the following questions.

1. Is the **goal** clear?
2. Is the message **concise**?
3. Is the **tone** appropriate?
4. Is the message **targeted to the audience**?
5. Is the **format** effective?
6. Is the message **error-free**?

1. IS THE GOAL CLEAR?

The main point of the message should jump out to the reader. Often when we first write an email, we follow our train of thought, working through logical steps and ending with the conclusion (the "punch line"). Since the reader is mostly interested in the punch line, reread your email and move the punch line to the top before you send, followed by the supporting logic.

Try rewriting the following email response to open with the main goal.

Question

Hi, Kris

I'm creating a project plan for the UL model we're building. Is the TPA data needed to get the correct starting premium level at each model start date? Or is it more of a periodic assumption setting input?

Coby Callahan, FSA, MAAA
Actuarial Director

Draft Response

Hi, Coby

There are three inputs to the UL premium assumption: seriatim target premium, premium history and paid-up indicator.

Seriatim target premium comes from the TPA data but shouldn't change in the future, so we don't need to refresh it. Premium history also comes from the TPA and is used to determine whether the policy has paid premium within the last 3 years. This field needs to be refreshed periodically, but not at every model start date. The paid-up indicator is sourced from the valuation extract, not the TPA. So, the TPA data does not need to be refreshed at each model start date.

Kris Silva, ASA
Assistant Actuary

Revised Response

Here is a potential solution.

Hi Coby,

The TPA data does not need to be refreshed at each model start date.

There are three inputs to the UL premium assumption: seriatim target premium, premium history and paid-up indicator. Seriatim target premium comes from the TPA data but shouldn't change in the future, so we don't need to refresh it. Premium history also comes from the TPA and is used to determine whether the policy has paid premium within the last 3 years. This field needs to be refreshed

periodically, but not at every model start date. The paid-up indicator is sourced from the valuation extract, not the TPA. So, the TPA data does not need to be refreshed at each model start date.

Kris Silva, ASA
Assistant Actuary

2. IS THE MESSAGE CONCISE?

Using fewer words is almost always better. When we follow our train of thought, we often include more detail than the reader needs or conversational phrases that don't add value. Reread the email and give yourself bonus points for every word or sentence you can delete without losing the core message.

Shorten the following email to see how many words you can delete.

Coby,

The short answer is that I don't think we need the TPA data stream to be refreshed at each model start date. There are two model inputs that we pulled from the data stream (seriatim target premium and premium history), but I think it's OK to refresh those periodically for assumption setting.

To be 100% clear, I've described each input to the premium modeling below. Feel free to call my cell if anything isn't clear.

There should be 3 inputs to the premium modeling assumption:

1. Seriatim target premium

- a. Used as the base premium for each policy, with a 110% persistency multiple applied
- b. TPA data feed was required for this input
- c. Target premium for each policy shouldn't change and no new business is being issued, so I don't think we need to refresh this data at each model start date

2. Premium history

- a. Used to determine whether the policy has paid premium within 3 years. This determines whether the policy will be bucketed as a "premium payer" or a "nonpayer"
- b. TPA data feed was required for this input

- c. Should be refreshed periodically for assumption setting, but does not need to be refreshed at each model start date

3. Paid-up indicator

- a. Used to assign policies to the "paid-up" bucket
- b. Available from the valuation extract

Kris Silva, ASA
Assistant Actuary

With the following potential solution, two minutes of editing reduced 225 words to 95!

Coby,

The short answer is that I don't think we need the TPA data stream to be refreshed at each model start date. There are two model inputs that we pulled from the data stream (seriatim target premium and premium history), but I think it's okay to refresh those periodically for assumption setting.

To be 100% clear, I've described each input to the premium modeling below. Feel free to call my cell if anything isn't clear.

There should be 3 inputs to the premium modeling assumption: There are two inputs from TPA data:

1. Seriatim target premium

- a. Used as the base premium for each policy, with a 110% persistency multiple applied
- b. TPA data feed was required for this input
- c. Target premium for each policy shouldn't change and no new business is being issued, so I don't think we need to refresh this data at each model start date

2. Premium history

- a. Used to determine whether the policy has paid premium within 3 years. This determines whether the policy will be bucketed as a "premium payer" or a "non-payer"
- b. TPA data feed was required for this input
- c. Should be refreshed periodically for assumption setting, but does not need to be refreshed at each model start date

3. Paid-up indicator

- a. Used to assign policies to the "paid-up" bucket
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Kris Silva, ASA
Assistant Actuary

3. IS THE TONE APPROPRIATE?

Tone is the attitude that is implied by the phrasing of the message. When you're frustrated, stressed or angry, reread your emails to see if they carry that negativity and are likely to demotivate the person at the other end of the message. As you complete the following activity, think about the characteristics of each message that make the tone more positive or negative.

Reorder these sentences from most likely to offend or upset the recipient to most likely to motivate him or her.

1. The original estimate for preliminary results was 1 p.m. Do you have a revised ETA?
2. I'm hoping to receive the results as soon as possible, since my manager is waiting for an update. Do you know when they'll be available?
3. Is there anything I can do to help with compiling the results for the model runs? I owe the results to my manager by 5 p.m., so if we can compile by 3 p.m. it will allow time for review and edits before we send.
4. WHERE ARE THE RESULTS? Was I not clear that they were due at 1 p.m.?
5. Please let me know when the results you promised at 1 p.m. will be available.
6. Thanks for working through the challenges with the model runs. Can you let me know when the results will be available?
7. If you had coded the model to run efficiently, then you could have delivered the results at 1 p.m. today, like I expected.

Here is a potential solution.

4. WHERE ARE THE RESULTS? Was I not clear that they were due at 1 p.m.?
7. If you had coded the model to run efficiently, then you could have delivered the results at 1 p.m. today, like I expected.
5. Please let me know when the results you promised at 1 p.m. will be available.
1. The original estimate for preliminary results was 1 p.m. Do you have a revised ETA?
2. I'm hoping to receive the results as soon as possible, since my manager is waiting for an update. Do you know when they'll be available?



6. Thanks for working through the challenges with the model runs. Can you let me know when the results will be available?
3. Is there anything I can do to help with compiling the results for the model runs? I owe the results to my manager by 5 p.m., so if we can compile by 3 p.m. it will allow time for review and edits before we send.

What characteristics seem to affect the tone? Five approaches for a more positive and constructive tone are suggested here. Since there are infinite ways to convey any message, feel free to add more ideas to the list.

1. Focus on the future instead of rehashing past issues.
 - **Resentful:** If you had been online to help this weekend, we wouldn't have to work tonight.
 - **Future-focused:** Since the rest of the team was online this weekend, do you mind handling tonight's task?
2. State facts instead of assigning blame.
 - **Blame:** You didn't deliver the results at 1 p.m.
 - **Fact:** The original estimate for results was 1 p.m.
3. Ask questions instead of assuming error.
 - **Assuming error:** A thorough review would have included X.
 - **Question:** Is there a reason you omitted X?
4. Thank people for their hard work.
 - **No thanks:** When will final results will be available?

- **Thanks:** Thanks, Kris, for all your hard work. Do you know when final results will be available?
5. Suggest specific next steps to improve the work.
- **Vague:** The colors in these slides look terrible.
 - **Specific:** I suggest using our company’s color palette for more attractive slides.

4. IS THE MESSAGE TARGETED TO THE AUDIENCE?

The message should be targeted to the intended reader. Consider what the reader already knows and how the reader will use the information.

Often, since I’m familiar with the details of my own work, it’s difficult for me to know whether or not I’ve simplified the email enough and if the content is sensible to someone less familiar with the work. To address this concern, I ask a co-worker without familiarity to review and provide feedback, which I use to simplify or clarify the email content.

In general, messages to senior executives should be brief and limited to information they need. In messages to actuarial students, more background information may be needed to help them learn. When communicating with nonactuaries, avoid technical terms and jargon. The following messages illustrate drastic differences in two messages replying to the same question, depending on who is asking the question.

Scenario 1

The chief actuary asks if TPA data is required this quarter.

The TPA data does not need to be updated this quarter, given that it was refreshed last quarter.

The TPA data should be refreshed on a regular basis, approximately once per year.

Kris Silva, ASA
Assistant Actuary

Scenario 2

The new team responsible for maintaining the UL model asks how often they’ll need to update input data from the TPA.

Modeling team,

UL is a flexible premium product, which means the premium paid is chosen by the policyholder as opposed to being a fixed amount.

In the model, policyholders are split into groups and assumed to pay a premium that is a multiple of the contract target premium. The grouping of policyholders is based on the premium history data that comes from the TPA. Please review the attached premium assumption memo for further background.

There are 3 inputs to the premium methodology in the model:

1. Seriatim target premium from the TPA

- a. This is a fixed amount on the policy that doesn’t typically change after issue
- b. This field does not need to be refreshed frequently, but it would be good to perform periodic checks to confirm that the rate remains unchanged
- c. This is imported into the model via the “SERIATIMTARGET.txt” extract

2. Premium history from the TPA

- a. This is used to assign each policy to its assumed “premium paying” bucket and should be refreshed on an annual basis
- b. When updated TPA data is available, we should schedule a working session to demonstrate how the “premium paying” buckets are assigned
- c. The MS Access database used to assign the premium is “PREMIUMASSIGNMENT.mdb”

3. Indicator of whether the policy is paid up

- a. This is the “paidup” field on the valuation extract
- b. The file name for the valuation extract is called “VALUATIONEXTRACT.xlsx”

Kris Silva, ASA
Assistant Actuary

5. IS THE FORMAT EFFECTIVE?

Readers more quickly process text that is broken into short paragraphs or bullet points. Our brains don’t think in bullet points, so the first version of an email is often written in large blocks of text.

Looking at the following two emails, which would you read and which would you quickly close in terror?

Before you hit send on a “wall of text,” like the first email, think about how to break it up. Are there several key points you can put into bullets? Can you categorize the information and use bold text for each category?

Formatting isn't a magic wand, so don't forget to make the email more concise and move the punch line to the top while you're making format changes.

Unformatted

Coby,

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There should be 3 inputs to the premium modeling assumption: seriatim target premium, premium history and paid-up indicator. Seriatim target premium was used as the base premium for each policy, with a 110% persistency multiple applied. A TPA data feed was required for this input. Target premium for each policy shouldn't change and no new business is being issued, so I don't think we need to refresh this data at each model start date. Premium history was used to determine whether the policy will be bucketed as a "premium payer" or a "nonpayer." A TPA data feed is required for this input. Premium history should be refreshed periodically for assumption setting but does not need to be refreshed at each model start date. Paid-up indicator was used to assign policies to the "paid-up" bucket. This field is available from the valuation extract.

Kris Silva, ASA
Assistant Actuary

Formatted

Coby,

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Assistant Actuary

6. IS THE MESSAGE ERROR-FREE?

Errors distract from the core message. This can include spelling errors, grammar errors and punctuation errors. If you have trouble catching your own errors, find an empty room and try reading the message aloud before you send (or whisper at your cubicle). Errors that you will miss when skimming visually will often pop out if you say the words.

Read these messages aloud and identify the errors in them.

1. What are the key next step called for, based on this discussion?
2. The estimated financial impact of this simplification is material for the UL product and requiring additional review from the Model Governance Committee.
3. The goal is to share examples of how each testing documentation package for different types of models.

4. The review from the pricing team ensures that the input grid is comprehensive and that no inputs are inadvertently excluded.
5. The scenario inputs to the model rely on an intermediate tool, within which is the reformatting of the scenario generator output.

Potential solutions:

1. What are the key next **steps** called for, based on this discussion? (grammar error)
2. The estimated financial impact of this simplification is material for the UL product, which **requiringes** additional review from the Model Governance Committee. (grammar error)
3. The goal is to share examples of **how** each testing documentation package for different types of models. (extra word)
4. The review from the pricing team ensures that the input grid is comprehensive **and that no inputs are inadvertently excluded.** (redundant)
5. The scenario inputs to the model rely on an intermediate tool, **within which is the reformatting of which reformats** the scenario generator output. (awkward phrasing)

As you read this article, you may have noticed that every strategy requires a little extra time spent rereading and revising your own emails. Time is the key ingredient for effective communication.



Invest more of your time writing effective emails so that your recipients can spend less. You'll save time on questions and miscommunication and establish habits that will last your whole career. ■



Melanie Dunn, FSA, MAAA, is a principal and leads the Seattle office at Oliver Wyman. She can be reached at melanie.dunn@oliverwyman.com.