The Importance of Adverbs (in Exams)
By David Idoux, ACAS

As actuaries, we're often presented with situations that ask for varying levels of detail. Technical stakeholders may be interested in the nitty-gritty detail, while executive stakeholders may be more interested in a high-level explanation. A key part of an effective communicator's skill set is crafting a message that resonates with the intended audience. While these considerations are important in a professional setting, they also are important to consider when sitting for CAS exams.

Written response questions typically come in three flavors: Concise, standard, or deep and thorough responses. Thankfully, there are context clues that can inform the candidate on how to respond.

Questions that are looking for a concise response will typically use the adverb “briefly” and are typically worth ¼ point. These questions can typically be answered in a sentence or less. No additional credit is awarded for a more detailed explanation, but credit could be lost if the additional detail proves to be incorrect.

For an example of this question type, consider Question 9.a from Fall 2019 Exam 5:

Briefly describe one similarity and one difference between the purposes of risk classification and individual risk rating. (½ point)

From the point total, we can infer that “briefly” describing a similarity and a difference is worth ¼ point. The responses for this question should be short and sweet. Just a sentence for each item is appropriate.

Standard response questions will not use an adverb and are typically worth ½ point. Since these questions are worth twice as many points, the exam writer is looking for a more in-depth response than the “briefly describe” questions. It's important to find the right balance when answering these questions; providing too little detail may result in lost points, while excessive detail can lead to wasted time.

For an example of this question type, consider Question 5.a from Fall 2019 Exam 6U:

Describe one reason that a rating agency may change the outlook, rather than downgrade the rating, of an insurer whose financial strength has declined. (½ point)

It’s clear from the absence of adverbs and the point total that the exam writer is looking for a standard response. A few sentences are appropriate.

The final flavor of written response is a deep and thorough response. Questions of this nature are the strongest prompt used by the Syllabus and Examination Working Group and seek very detailed responses that demonstrate a deep understanding of the material. These questions typically use the adverb “fully” and are worth at least 1 point.

For an example of this question type, consider Question 4.c from Fall 2019 Exam 6U:

Fully describe receivership, including an explanation of rehabilitation and liquidation. (1 point)

From the “fully” adverb and the point total, we know that the exam writer is looking for a deep and thorough response. Full credit explanations will likely be at least a few sentences in length and demonstrate a comprehensive understanding of the material.

Please read questions carefully and pay attention to point values on all CAS exams that contain written response questions. It is in the candidate’s best interest to only provide as much information as is necessary to receive full credit. Extraneous detail provides no benefit and consumes valuable time on the exam, reducing the available time for responding to other questions.
At some point in your career, you may have heard the old adage, “It is not what you know, but who you know.” Unfortunately, this may bring up a slew of mixed emotions and thoughts about favoritism, nepotism or even thankfulness if you have benefitted from knowing someone. The thrust of this statement is pointing at who is in your network. While we may bristle at the adage above, I believe that a robust personal network is a valuable tool for your career. I would never argue that someone should get a job simply on the basis of a relationship. So, let’s reframe this sentiment and say, “It’s not only who you know but also what you know!” Given this reframed idea, we are left with two components to develop — a network and your actuarial knowledge/business skills. This article will focus on strategies for building your network.

In its most simple terms, a network is the people who you know. But what if the people you know are merely acquaintances and know nothing meaningful about you? That would not be very valuable. Cultivating meaningful connections can be a key to unlocking opportunities and advancing your career trajectory. Let’s explore how we can make these connections.

**Be authentic** — This is a key to building genuine connection. Presenting your true self establishes trust and fosters deeper relationships. Authenticity allows for rapport to develop. In networking, being authentic means being transparent about one’s values, goals and experiences. This can lead to mutually beneficial opportunities and long-lasting relationships.

**Read and ask questions** — If you will be engaging with someone on a specific topic, I highly encourage you to read and establish a minimal knowledge base. Also, prepare some questions to ask ahead of time. Reading exposes you to new ideas, trends and industry insights. Asking thoughtful questions demonstrates interest in others, creates meaningful dialogue and builds rapport. Finally, reading and asking questions facilitates the exchange of valuable information and fosters authentic relationships, tying into the first suggestion above.

**Stay up to date on current events** — This idea is along the same lines as “read and ask questions.” Staying up to date on current events expands beyond information specific to your job/career — topics such as pop culture or sports just to name two. Being informed about a variety of subjects will enable you to make small talk with others when networking virtually or in person. It serves as a powerful icebreaker and facilitates the initial rapport-building process. Small talk about current events also provides a neutral ground for conversation before delving into more specific professional topics. Being adept at conversation surrounding current events also sets the stage for deeper and more meaningful networking interactions.

**Reach out and take risks** — Don’t be afraid to reach out to others. This could include article authors, conference speakers and those at higher levels of your own organization. You could also consider attending CAS meetings or volunteering on a working group. I recognize this is probably intimidating, but there is little risk in dropping someone an email and expressing your thanks or making an inquiry. Taking risks in networking involves stepping out of your comfort zone, but that is where growth happens! Being proactive demonstrates initiative, grows your confidence and shows a willingness to seize opportunities.

**Take notes** — Unless you have an incredible memory, it is wise to take notes during or after networking interactions. This helps you retain key facts, demonstrates attentiveness and allows for meaningful follow-up conversations. This could mean jotting down key points from a discussion, noting specific interests or needs expressed by a contact. It may also involve identifying action items for future follow-up. Spending a few minutes after chatting with someone recording what you remember can serve as valuable reference points for the future. Making records of your interactions can contribute to more fruitful and enduring connections.

In conclusion, networking is not about getting something from someone. It is about building beneficial relationships. As you do so, you will establish a robust personal network that will benefit your career journey. Building a network requires time, effort and continued commitment. It is not only a one-time conversation. By being authentic, engaging in continuous learning, staying informed about current events, reaching out to others, taking risks and diligently taking notes, individuals can strengthen their network and unlock a wealth of opportunities. Remember, networking isn’t just about who you know — it’s about fostering genuine relationships that enrich both personal and professional lives. Use these strategies to embark on this journey of building relationships and navigating the dynamic landscape of networking with confidence and purpose.
The purpose of the “Exams in Real Life” series is to share how content from CAS exams is used in the workplace today. In essence, we would like to supply a little motivation by answering “Why am I learning this stuff?” and “When am I ever going to use any of it?” If you have not already done so, please take a moment to read our prior articles (see Exams IRL Archive below).

For this issue, we’re focusing on MAS II – Modern Actuarial Statistics II.

The material on MAS II introduces candidates to a powerful list of skills!

The efficacious nature of this exam’s material is in the name: MODERN. The main reason why the actuarial career is so dynamic is that we’re always trying to progress. With the innovations in data storage capabilities and computing power, our analysis can/must advance. Improved predictive analytics and the benefits of Bayesian thinking are making actuarial estimates more accurate and granular. We are in the middle of an actuarial renaissance! MAS II, along with MAS I, the intro to Data & Analytics course, and the upcoming Predictive Analytics module help prepare candidates for the future of actuarial analysis.

MAS II is split into four beneficial topics: credibility, linear mixed models, statistical learning and time series. Let’s discuss!

Introduction to Credibility
Credibility is a time-honored actuarial practice. Often, we are making actuarial estimates, using internal data that may be too small or too noisy to consider fully statistically significant, particularly as we attempt to predict at more granular levels. When this is the case, we would like to weight our internal estimates with a related, significant value or underlying assumption of data behavior. This weighted estimate provides a credible number to use in actuarial methods, such as indications. For example, we may feel our data is too thin to fully rely on an estimate of expected losses for use in a state indication, so we may want to credibility-weight the estimate with a countrywide expected loss, putting 40% weight on our state loss estimate and 60% on the countrywide. The resulting credibility-weighted expected loss will be a more stable number to use in our indication.

MAS II discusses how we decide the weights (Z) to apply when calculating a credibility-weighted estimate. The classical technique (limited fluctuation) is currently used for the ratemaking methods in most lines of business. While simple, it is mostly accurate. The method may cause inaccuracies, however, in the fringes (e.g., super safe policyholders and/or super risky policyholders). For improved accuracy, actuaries are increasingly delving into Bayesian methods. MAS II discusses Buhlmann, Buhlmann-Straub and general Bayesian procedures. These methods allow one to make assumptions of how the nature of our data might behave, then apply internal estimates to these assumptions, either by calculating Z or by creating a predictive distribution to use for our estimates going forward. Understanding and applying these Bayesian-based methods will be vital in improving actuarial expected frequency, severity and aggregate loss estimates, in particular. Better predictions on a more granular scale lead to favorable selection and fairer premiums for policyholders.

Linear Mixed Models
To charge fair premiums to our policyholders, we need to be able to differentiate between them in a credible manner. Classifying risks into homogenous groups for a series of selected policyholder characteristics and calculating the relative average expected losses for each level allows us to create a multiplicative algorithm called a class plan. The purpose of the class plan is to calculate each policyholder’s fair premium, based on their individual characteristics. The more we split up the data into groups, however, the less statistically significant will be our predicted losses. This provides for an interesting dilemma: We want to classify our risks properly, but we also want credible estimates. As such, our groupings can’t be too granular. However, risks within each group are different from each other. Thus, we aren’t fully capturing the true classification. For this dilemma, we can benefit from the use of models, like linear mixed models (LMMs).

LMMs incorporate fixed and random effects, meaning we can model the relationship between a set of independent variables and the response variable (e.g., policyholder characteristics versus expected loss), while also modeling the differences between risks within each independent variable. Along with other tools, like generalized linear models, LMMs help us differentiate our policyholders more effectively in our class plans. LMMs can also be used in book of business analysis, planning and more.

Statistical Learning
Along with LMMs, there is a plethora of helpful statistical tools to improve our actuarial methods and analysis. MAS II introduces many of these, including k-nearest neighbors, decision trees (CART), random forest, gradient boosting machines (GBM), principal components analysis (PCA), clustering (k-means, hierarchical), neural networks, along with summary statistics interpretation.

These tools are used for a variety of purposes. For example, tree-based methods and PCA are used to help identify significant variables for use in models (e.g., which policyholder characteristics are most predictive of expected loss). Clustering methods are used to help identify splits between levels within a variable (e.g., territories in a state).

The ability to interpret statistics (such as p-values, AIC, R-squared, Gini, lift charts, etc.) is necessary for understanding variable significance and model predictive accuracy. We must decide which models are best for actuarial estimation with confidence that the selection of variables and the resulting predictions are trustworthy.

Time Series
Much of the data used for actuarial estimation has a time component,
where prior data points naturally lead to subsequent data points (i.e., the data is correlated through time). This autocorrelation, along with long-term trend and seasonality components, provide helpful patterns in predicting future behavior.

Time series models help to identify these patterns. MAS II will teach you the autoregressive integrated moving average (ARIMA) model in particular. The “AR” component models the autocorrelation via regression, the “I” component supplies a sort of data transform (differencing/integration), which implicitly models seasonality and other effects, and the MA component models a long-term trend via a moving average.

ARIMA models are underutilized! They have powerful possibilities in trend selections, such as premium, loss, exposure and expense trends. ARIMA models can be used to identify drivers of change. They can be used in book of business analysis, planning and much more.

Three Things to Know About the Actuarial Professional Analysis (APA)

By Ashley Zamperini, CAE, CAS Director of Certification Products

As announced earlier this year, the CAS has launched the Actuarial Professional Analysis (APA), a comprehensive evaluation that will allow the CAS to validate or redefine the importance of content areas to current and future actuaries. But what does this mean for candidates? Read along for three important points you need to know.

1. You can participate!
All CAS members and candidates will have an opportunity to provide input to the evaluation, with the results used to determine the appropriate weights and cognitive levels for various content areas within the CAS’s credentialing pathway. Right now, candidates can provide input at various events, like the CAS Courses on Professionalism, and through brief surveys. The most prominent way we will be collecting feedback is a wide-reaching survey that will be delivered to all CAS members and candidates, tentatively scheduled for late 2024. Your responses to this survey are critical to ensure that the CAS has the latest information for the analysis.

2. You will benefit from the APA results.
As mentioned above, the CAS will use the results of the comprehensive evaluation to determine the appropriate weights and cognitive levels for various content areas within our credentialing pathway. As a result, the value of CAS credentials will increase by becoming more relevant to employers and clients. The skills and knowledge that credentialed actuaries learn through the exam process will equip them with a unique skillset. By incorporating future skills and modern methods, credentialed P&C actuaries will be forward-thinking experts in evaluating risk and be able to communicate effectively to business leaders.

The results of the Actuarial Professional Analysis will also be leveraged in the development of the CAS's professional education offerings, ensuring the current and future relevancy of our programming and further enabling the CAS to help actuaries build skills for the future and advance in their careers.

3. The APA will be an ongoing process.
The APA is an ongoing process that will occur every few years to ensure our data is up to date. While the evaluation is customized for the P&C actuarial profession, the concept of the analysis is typical of periodic industry-wide evaluations seen in other professions requiring certification. The CAS is therefore adopting industry best practices that will enable us to more swiftly respond to market needs so that CAS credentials remain the gold standard for P&C actuaries.

“It's important to have broad input from across the P&C actuarial profession to ensure that the results of the APA reflect the current and future skill-building needs of actuaries and those who rely on our expertise,” said CAS President Frank Chang. “I encourage all members and candidates to take advantage of the opportunities to make your voice heard throughout this process.”

Candidates should know that all impacts to our stakeholders are being carefully considered, with particular focus on the candidate experience and credential value to employers. The APA will continue to focus on the candidate experience, making enhancements to the credentialing pathway through the results of the information gathered.

To learn more about the APA, visit casact.org/APA.
Congrats on passing your first two actuarial exams! If you are reading this article, you’re probably wondering what you should do next. Unfortunately, there is not a “right” answer, and what is most beneficial for you to spend your time on can depend on where you are on the actuarial path. Hopefully, this article can provide you with more information to make that decision.

CAS Exam MAS-I (Modern Actuarial Statistics-I)

Whether you’re a college student, career changer or in an entry level role, if you have decided on the P&C route, the most natural next step is to start studying for your third actuarial exam. While it is the most time-intensive option, it is also probably the most beneficial in terms of securing an actuarial role or progressing in your current role. The first recommended CAS exam after you pass Exam P and Exam FM is Exam MAS-I, although some candidates prefer to start with Exam 5 due to the applicability of the material to their roles. Exam MAS-I is a four-hour exam offered twice a year and covers probability models, statistics and extended linear models. It is a significant jump in difficulty compared to the prior two exams, requiring over double the study time for many candidates.

While a discount is provided to students, candidates who meet the financial need criteria can apply for the Actuarial Exam Support Program.

CAS DISCs (Data and Insurance Series Courses)

If you want to continue making progress towards your CAS credentials but don’t have the time to prepare for a full exam, another option is to complete one of the three required DISCs. The DISCs are offered four times a year through The Institutes and consist of an online course and a final multiple-choice test. The time to complete a DISC is significantly shorter than an exam, taking approximately 40 study hours.

While they can be completed in any order, “Introduction to Data and Analytics” is the shortest of the three and provides a foundation in understanding and utilizing data, which can be useful in your first actuarial internship or job. If you have more time and would prefer to learn about the business of insurance, you might consider starting with the “Risk Management and Insurance Operations” DISC.

A 50% discount on the DISCs is available to students; however, the cost may still be prohibitive and therefore many candidates choose to wait till they are in a full-time role where their employers will cover the costs. Many candidates also choose to complete the DISCs while waiting to receive exam results.

Validation by Educational Experience (VEE)

If you are in college and still undecided on whether to pursue the CAS or SOA pathway, you might consider looking into adding courses to your schedule that fulfill the VEE requirements. If you are in an actuarial science program, it is likely that required courses for your degree will fulfill VEE requirements; however, it is still a good idea to check. The CAS requires credit for two VEE topics, accounting and finance, as well as economics, both of which are also required in the SOA Credentialing pathway.

If you are a career changer or otherwise out of college, there are also alternative ways to obtain credit for the VEE credits, outside of college courses.

Practical Experience

College students who have passed one or two exams should work towards securing an actuarial internship. Internships provide hands-on experience, networking opportunities, skill development and potential job offers post-graduation. Most companies hire for their summer internships in the fall, but students can prepare by polishing their resume and working on their interview skills.

Actuarial internships can be very competitive, therefore the CAS Student Central Summer Program is also an excellent way to gain experience and knowledge of the P&C insurance industry by providing technical and soft skill development as well as networking opportunities.

Technical Skills

Increasing your technical skills will be very beneficial for both securing an actuarial role as well as excelling in your internship or job. The four tools most used by actuaries, according to the CAS Actuarial Technology survey, are Excel, SQL, R and PowerBI. Completing a project using a few of these tools can be a great way to improve your skills and add to your resume. You can read the Future Fellows article “Get Started on Two Skills, Not on a Syllabus” for more ways to improve your programming skills.

What the ideal next step is can depend on your own goals and circumstances. However, if you are set on the P&C path, I would recommend you study for MAS-I and work on the DISCs (and VEEs if you don’t already have them) in between sittings of exams. If you are a college student and unsure of whether you want to pursue the CAS or SOA path, I would recommend focusing your efforts on securing an actuarial internship as well as completing the VEEs, improving your technical skills and maintaining a high GPA.
Study Tips for Navigating Content Outline Changes from a Candidate

By Liya Zhang, ACAS

Recently there have been notable changes to the content outline's for exams through the Admissions Transformation Plan (ATP). While candidates may express frustrations regarding the new content outline's, it’s important to recognize that this is a natural part of evolving our basic education program. It’s essential to ensure that credentials meet the gold standard for property & casualty actuaries. The primary objective of candidates is to successfully pass the examinations and attain their professional credentials. Let's dive into some study tips and strategies that can help you navigate these changes.

1. Understand the changes
The initial step of taking any exam would be reading through the content outline's thoroughly. Identifying what topics have been added, removed or modified will give you a clear picture of what to expect. The content outline's provide you with information on exam structure, content material, and areas on which to focus. Keep in mind that when exam question writers craft the questions, one of the main considerations is whether the question is covered by the content outline's domains and tasks. Therefore, the ability to complete the tasks given in the content outline's is the key. Moreover, pay close attention to any new topics and ones with more weight.

   In addition to the changes in domains and tasks in the content outline's, new exam item types have been introduced. Since the majority of exam practice problems are not presented in the new exam item type format, it is critical to be familiar with these item types before taking your exam. The CAS provides sample testing through Pearson Vue for candidates to prepare for the exam environment. This is the appropriate way to understand how the new exam item types will be presented. For a complete overview, the CAS also provides a sample item video tutorial (https://www.youtube.com/watch?v=dRQT_YDfTl0). If this is your first exam with spreadsheet-type items, keep in mind there are differences between the Excel functions and Pearson Vue spreadsheet capability.

   New terminologies were also introduced in the content outline’s a few years ago. “Content Outline’s” are being referenced throughout this article instead of “Syllabi.” These terms refer to the same concept; however, there are a couple of other terminologies that might have similarities and differences compared to the old terms. The CAS published an article, “Content Outline Informational Announcement” (https://www.casact.org/article/content-outline-informational-announcement), detailing the new terminologies that are intended to provide you with an understanding of how the new content outline's are structured.

2. Use official resources provided by CAS
The key resource that you should utilize is the source materials provided under the test references section of the content outline's. Exam question writers are leveraging those associated readings and so should you. Investing your time into studying the source materials helps you gain a deeper understanding of the key concepts, especially in the situation where minimal past exam problems are available. Mastering the source material would be the optimal strategy to prepare for an exam.

   The CAS has a whole section on their website dedicated to resources for preparing for CAS exams (https://www.casact.org/resources). It contains many useful insights that can help you prepare for an exam. For example, the new “Post Exam Summary,” crafted by the Syllabus and Examination Working Group, aims to offer candidates insights on past exam performance, along with recommendations and study tips. It provides specific commentaries regarding each of the constructed response exams. It is particularly useful to see the areas in which many candidates need improvement — you should pay close attention to those areas to avoid repeating the same mistakes. Taking some time to explore this site for additional study resources and strategies is worthwhile.

3. Leverage the study material from an old exam
Several strategies can be used effectively to prepare you for the updated content outlines. If you have previously studied the material from the prior exam, revisiting your old study material can be beneficial. This allows you to save some time by identifying areas where you may need additional review compared to starting from scratch. Familiarizing yourself with old study material helps you reinforce concepts and understand the subject matter better.

   It’s important to note that the instructors from study vendors might be new to producing these materials for the course. It’s possible that they may not be as well-established or comprehensive as other materials. In this case, finding and practicing old exam problems related to the new content outline's can help you gain some familiarity with how these problems may show up on the exam. In addition, seeking support from friends or colleagues who have successfully passed the exam with these content outline's and borrowing their study materials can be an alternative approach to take. They can provide you with valuable resources and strategies based on their experience.

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4. Join a study group
There are numerous advantages you can gain from studying with other candidates for the same exam. First, collaborative learning allows you to teach and learn from each other. The best way to know whether you have mastered the material is through explaining concepts to others. This process can also identify gaps in your knowledge. Others can help you to gain additional insights and clarify any confusion. Second, you can share study resources such as formula sheets, practice problems and additional support. It’s always good to have more study materials to leverage. Additionally, others may have alternative effective study strategies for you to try out. Last, peer pressure can be motivating and encourage you to be actively studying. If there are structured study sessions and deadlines set up by the group, it can help prevent procrastination and ensure that you are staying on schedule.

5. Be adaptive
It’s possible that some strategies that worked well for others may not work for you. It’s common for candidates to try out multiple exam strategies before finding out what works best. This is especially true when you are starting a new exam. There are also different study materials that are better suited for different exams. Video-based lessons may have worked well for you in the past, but with a new exam, reading through the source material might better prepare you instead of going straight to study vendors. Utilizing as much study material as possible and not just focusing on what you like can be key.

   It is challenging enough to study for an actuarial exam. It is even more stressful to fail an exam and have the content outline’s change in the next sitting. This situation can feel overwhelming since it requires you to recalibrate your study approach and learn new material with limited resources. By keeping a positive mindset and adjusting your study strategies, you can give yourself the best chance of success in your actuarial exam journey.

The Candidate Advocate Working Group Mission
The Candidate Advocate Working Group (CAWG) focuses on issues of importance to candidates who are pursuing CAS designations. It serves as a direct point of contact for candidates to engage with the CAS and admissions working groups by sharing their thoughts and feedback. The CAWG also supports candidates’ career advancement by advising candidates of resources available to them. The working group utilizes various communications tools, such as the quarterly Future Fellows newsletter, to engage candidates and provide information on topics of importance. Candidates may contact the Candidate Advocate Working Group at CAWG@casact.org. The Casualty Actuarial Society is not responsible for statements or opinions expressed in articles, discussions or letters printed in Future Fellows.
STUDY AIDS AND SEMINARS

Information on study aids and seminars is provided only as a convenience to CAS candidates. The CAS takes no responsibility for the accuracy or quality of the study aids and seminar announcements attached to this notice. Please note that the Syllabus and Examination Working Group expects candidates to read the material cited in the Syllabus and to use other material as a complement to the primary sources rather than a substitution for them.

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