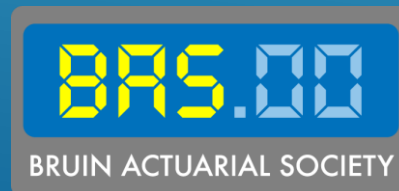


2019 CASE COMPETITION WORKSHOP

Bruin Actuarial Society



PART I: TACKLING THE CASE

Agenda

- What to Know
- Prior to First Meeting
- Walkthrough
- Example from 2018 Case
- Final Words and Tips

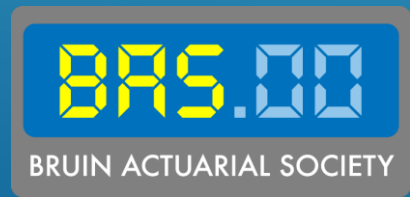
What to Know

- Underclassmen \neq burdens
- Expect to spend long hours
- No single correct solution

Prior to First Group Meeting

- Set aside a ton of time to meet up, and meet as early and as much as possible
- After you receive the case, read it thoroughly and come to first meeting with questions and thoughts to discuss
- Advice: Don't waste valuable group time reading

WALKTHROUGH



1) Write down your action plan

- Prioritize more immediate tasks (e.g. understanding the workbook)
- Look closely. The case might give you a to-do list!

2018 Case:

Once you have completed your analysis, you will create a presentation of your results which will be presented to CliEnt. **Your presentation should include at least the following items:**

- Actual plan experience compared to current assumptions, and possible real life explanations for any changes

You will use the data to perform your experience study, **assessing the validity of the current assumption and proposing new assumptions**, if necessary. The assumptions you will be studying are:

- Active Retirement Rates
- Terminated Vested Retirement Rates
- Active Termination Rates

tions with justification using the above explanations, if

assumptions on the plan's liabilities – how will the

· why might you not want to just use the actual rates as

You will want to compare the actual plan experience against the expected assumption, using a 95% confidence interval around the expected assumption. You may assume

2) Look for definitions and other information in the case

- Can help you get started on that to-do list
- 2018 Case defined each rate; we just needed to determine how to calculate them

2018 Case:

Note that **Active Retirement Rates** apply to current actives who are eligible for immediate retirement. The decrement describes the probability that they will commence their benefit in the next valuation year.

Terminated Vested Retirement Rates apply to current Terminated Vested participants who are eligible to commence their benefit. The decrement describes the probability that they will commence their benefit in the next valuation year.

Active Termination Rates apply to current actives who are not eligible for immediate retirement. The decrement describes the probability that they will leave CliEnt in the next valuation year. Note that the current Active Termination Rates only vary by age. You may want to check if there are other variables that impact this behavior.

There are a few types of participants that you will see in the data files:

- **Active:** These participants are currently employed at CliEnt and earning service toward their pension.
- **Terminated Vested (TV):** These participants are no longer employed at CliEnt. They are owed a future benefit, but have not commenced their benefit yet.
- **Terminated Not Vested (TNV):** These participants are no longer employed at CliEnt. They are not owed any future benefit, because they did not vest in their benefit before termination.
- **Retiree:** These participants are no longer employed at CliEnt and are currently receiving their pension benefit from CliEnt.

3) Examine data

- Comparing the data to your action plan, determine what information you need to know
 - Is there any terminology you need to look up?
 - Do you need to research the qualitative factors contributing to the numbers?
- Think about what you know and what you do not know, and discuss with your teammates what steps need to be taken to accomplish your task

4) Delegate duties appropriately

- Excel isn't like Google Sheets where you can collaborate in real-time
- Person most experienced with Excel can be the “keeper” of the team's data
- Roles are fluid and are NOT strict

Deep Dive into Excel Role

- Rearranges data to best suit team's needs at different times
- Uses PivotTables to quickly determine useful numbers
- Takes breaks to convene with rest of the team when there's a major obstacle to overcome
- Explains Excel procedures to another member who's experienced with Excel to catch potential errors
- Ex: Between group meetings, the Excel person on my team created columns using COUNTIF to sort data

Deep Dive into Non-Excel Roles

- Don't avoid Excel (i.e. may help fill in gaps)
- Research background info, like qualitative trends that may be associated with quantitative trends in data
- Discuss how to make certain calculations > agree on methods > assign calculations to each person

Roles are not isolated!

- If multiple team members are experienced with Excel, you should swap roles periodically and check in with each other
- Non-Excel people can ask Excel person to determine useful numbers for calculations
- Excel person contributes to major discussions and must also agree with methods for calculations
- Non-Excel people can double check Excel person's work and process

Example of Collaboration Between Roles

To work around the lack of real-time collaboration in Excel:

- Non-Excel people can make calculations and graphs in their own Excel sheets
- Individual sheets are shared with Excel person to be compiled into one central document
- Excel person shares consolidated sheet with rest of the team so that everyone has updated info to work with

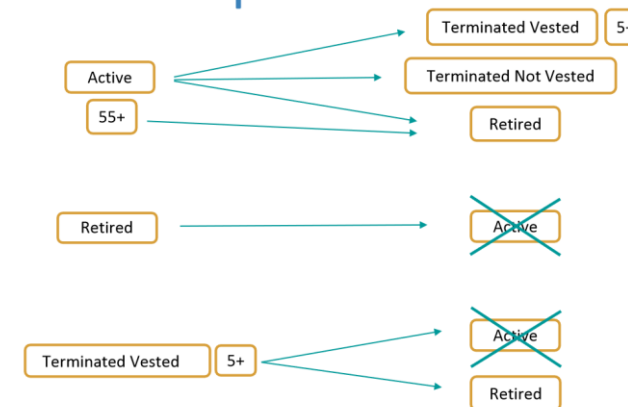
5) Assign tasks to each person

- Excel person starts organizing data in useful manner
- Other team members select one piece and start analyzing
- Re-assign new tasks as they're completed
 - i.e. Researching qualitative trends, creating other figures, etc.

2018 Case:



Status Assumptions



6) Assign different parts of the presentation to each person

- Each person creates PowerPoint slides for their respective parts
- Send the slides to one person to compile into a single presentation
- Share the unified presentation with the whole team

7) Everyone writes the executive summary

- Using Google Docs to collaborate may be a good idea
- Discuss content to be included and create an outline
- Assign each person a part to write
- Read the entire summary as a group and make edits as needed

8) Practice presenting

- Practice individually
- Run through entire presentation as a group
- Practice gestures and body posture, where each person will stand
- Don't be afraid to give each other feedback

9) SUBMIT DELIVERABLES ON TIME!

- Include presentation slides and executive summary
- You can't present what you don't submit!



Yes, this counts as late!

Recap of Walkthrough

- 1) Write down action plan
- 2) Look for definitions/information
- 3) Examine data
- 4) Delegate duties
- 5) Assign tasks
- 6) Make the presentation
- 7) Write the executive summary
- 8) Practice presenting
- 9) SUBMIT DELIVERABLES

EXAMPLE FROM THE 2018 CASE

Example from the 2018 Case

Context:

- You are a consulting actuary for a company with a pension plan
- You are tasked with:
 - Comparing existing assumptions of active retirement rates, terminated vested retirement rates, and active termination rates to historical data
 - Determining if old assumptions are accurate or if they need to be updated (and if so, what the new assumptions should be)
 - Estimating the change in the company's liabilities, if applicable

Example from the 2018 Case

- First, look at the definition for active retirement rate

Note that **Active Retirement Rates** apply to current actives who are eligible for immediate retirement. The decrement describes the probability that they will commence their benefit in the next valuation year.

- Think about what “current actives who are eligible for immediate retirement” means:
 - People who are active, 55+ years old, AND vested (worked for 5+ years)

Example from the 2018 Case

- Notice data doesn't have certain columns
 - Vested/non-vested or age
- Figure out what you want to know
 - Determine how long participants worked up until that point (based on date of hire and date each year's dataset is created)
- Create new columns as appropriate
 - 1) Classify participants as "vested" if 5+ years or "non-vested" if < 5 years
 - 2) Age based on birthdates and date that each year's dataset is created

Example from the 2018 Case

- Use SUMIFS to determine how many people are active, 55+, AND vested in each age group for ALL years
- Subtract number of 55-year olds in 2012 by number of 56-year olds in 2013 who meet this criteria (decrement)
- Exposure = number of 55-year olds in 2012 who met criteria/total number of people who could have retired in 2013
- Divide decrement by exposure
- Repeat this for all years and all age groups

FINAL WORDS AND TIPS

Final Words and Tips

- Try your best and present ANYTHING you come up with, even if you don't think you have much to present
- There's nothing wrong with stating what you know and don't know
 - My team included a tedious formula for calculating liabilities that we WOULD'VE used if we had more time
 - If you know you don't have time to do something, don't waste time on it; focus on getting something that CAN be presented
- Use presentations from previous years' finalists as examples

Final Words and Tips

- ABSOLUTELY talk to each other constantly
 - Explain process of calculations or Excel procedures to each other to reveal errors or details that were overlooked
- Keep a running list of any assumptions you make, calculation methodologies, etc.
- Don't stress over lack of Excel experience
 - Attend BAS Excel workshops

Final Words and Tips

- Prepare for the unexpected
 - My team 100% didn't think we'd make it to the final round, but we ended up winning
 - Don't be intimidated out of doing the case competition!

The Case Competition is a worthwhile experience regardless of the outcome. What are you waiting for?



PART II: SLIDE DESIGN AND PRESENTATION

Agenda

- Importance of strong communication
- The visual aid: effective slide design
- Presentation: spoken and unspoken
- Answering difficult questions

Our emphasis on communication

- Many other case competitions have a **written component only** in the first round
- We have a full presentation aspect from the very beginning
- Case competition participants will gain exposure to all forms of communication:
 - Technical (through the Excel files)
 - Written (through the written memorandum)
 - Verbal (through the presentation and question and answer portions)

Our emphasis on communication – **why?**

- For **any** profession, communication is vital—even more so for actuaries.
- We don't just come up with results; we **present** to key stakeholders: our colleagues, other departments, internal management, clients, ...
- It's not enough to have the right answer. You have to convince your audience your answer is right, or it all goes to waste.

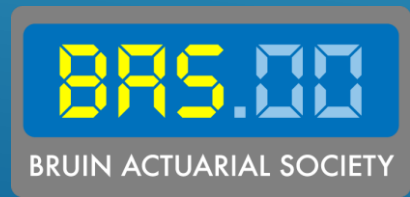
Our motivation

“The one easy way to become worth 50 percent more than you are now — at least — is to hone your communication skills — **both written and verbal.**”

- Warren Buffett

- We want to give **everyone** an opportunity to hone their written and verbal communication skills.
- Put in the work, and you will be worth much more than 50% more when employers start looking through your résumé next recruiting season.

SLIDE DESIGN



Slide Design

- The PowerPoint should serve as a **visual aid**. It is not the primary focus!
 - **Note that BAS Workshop slides are not a good example of effective slide design.** Our slides are designed so you can review the material in full detail later!
- The primary focus is the presenters—**you!**
- Let's consider a poorly designed slide. **First assume that we wish to present the data in a table.** What can be improved about the following slide?

The error in our reserves had we applied the loss development method for the past 5 years

Year	Reserves from Loss Development Method	Actual Claims Paid
2014	\$15,837,208.23	\$16,629,068.64
2015	\$17,297,382.35	\$16,778,460.88
2016	\$19,284,048.01	\$17,741,324.17
2017	\$23,208,002.18	\$23,672,162.22
2018	\$24,292,830.58	\$26,722,113.64

Loss Development Method: Reserve Errors

Year	Development Method	Actual Claims Paid
2014	\$15.8M	\$16.6M
2015	\$17.3M	\$16.8M
2016	\$19.3M	\$17.7M
2017	\$23.2M	\$23.7M
2018	\$24.3M	\$26.7M

Slide Design

- This is already much more readable:
 - Shortened the title and column headings, and made them stand out against the background
 - Got rid of immaterial information in the numbers to make them easier to read
 - Increased the text size so it could be seen from farther away
- However, there's another issue: It's hard to compare how far off we were. Let's fix that:

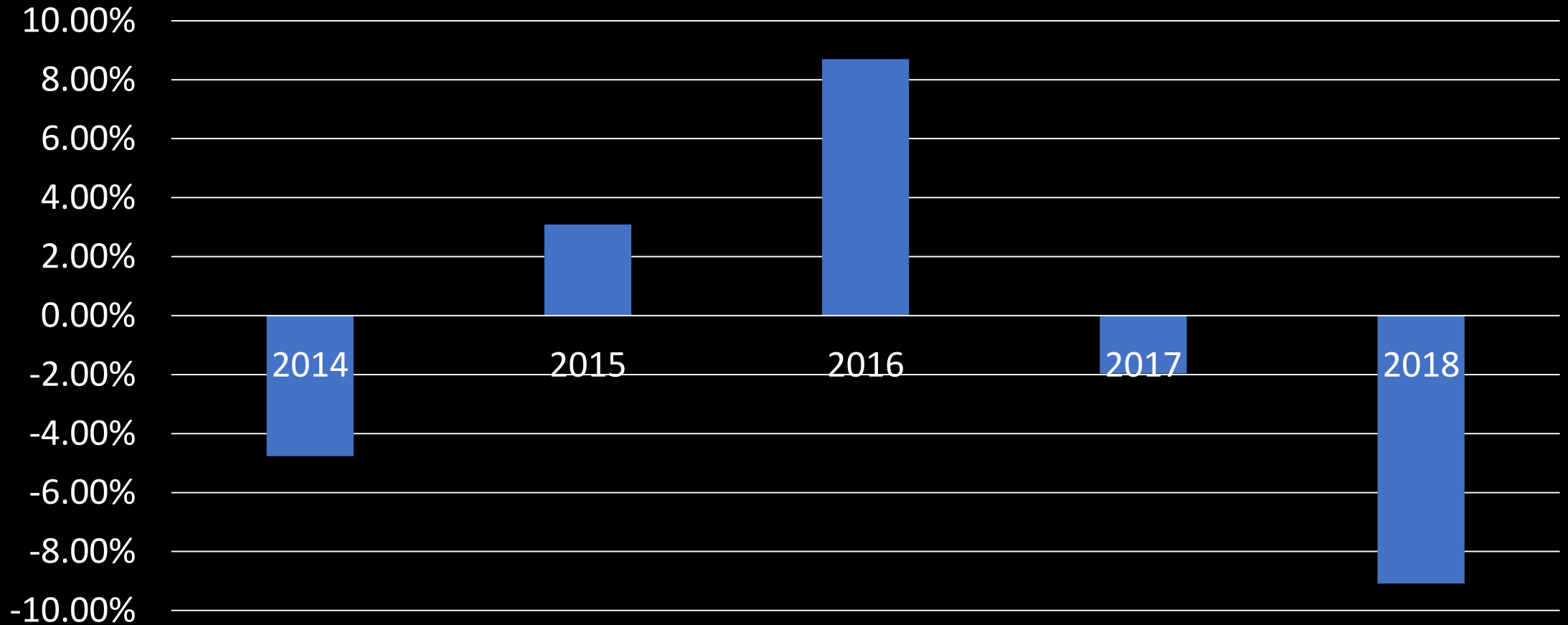
Loss Development Method: Reserve Errors

Year	Development Method	Actual Claims Paid	Percent Error
2014	\$15.8M	\$16.6M	-4.8%
2015	\$17.3M	\$16.8M	+3.1%
2016	\$19.3M	\$17.7M	+8.7%
2017	\$23.2M	\$23.7M	-2.0%
2018	\$24.3M	\$26.7M	-9.1%

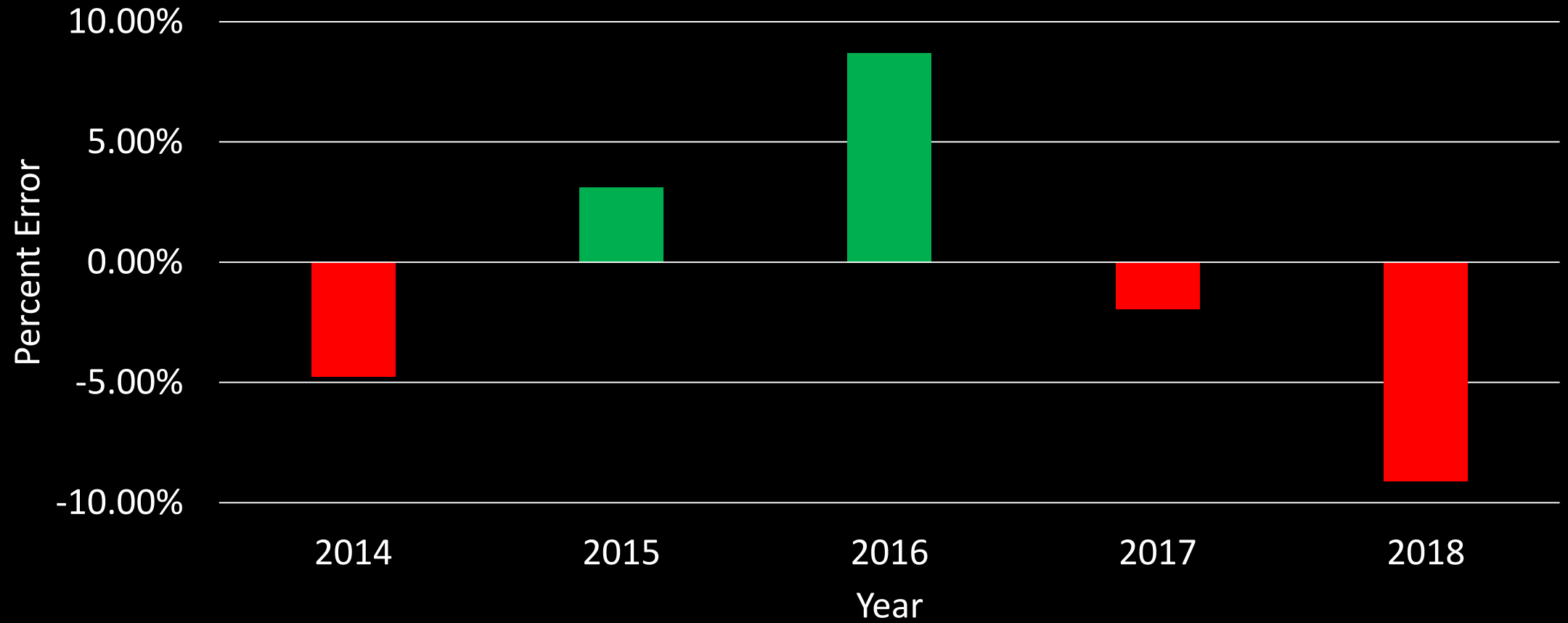
Slide Design

- Much better! However, people don't like reading.
- When possible, consider summarizing data in a visual manner, rather than data tables.
- Keep the visual aid **simple**—don't make it any harder than it has to be for your audience!
- Let's consider the following change. How can we improve this graphic?

Loss Development Method: Reserve Errors



Loss Development Method: Reserve Errors



Slide Design

- This concludes our example with visualization.
- Let's consider a different situation: We always want to introduce the problem and our solution at the very beginning.
- How can we improve the following opening slide?

The Problem and Our Solution

- Management has been using the loss development method for the past half a decade, and the reserves it has generated are questionably accurate.
- We noticed that the historical errors were substantial and volatile, so we want to see why this is the case.
- We have determined that the over-estimation of reserves was due to a change in the book of business, and the under-estimation of reserves was due to catastrophe losses in Florida.

Slide Design

- Simple issue: **too many words!**
- **People do not want to read.** The content on that slide is something that should be said, not written.
 - If your audience is reading the slides, they aren't paying attention to you!
- Professor Caine's rule of thumb: **“No more than 12 words per slide”**
 - This is not a hard cap, but it's always a good idea to see if you can reduce the number of words to this general range.

The Problem

- Loss development method historically used
- This method has substantial errors

Causes

Changes in book
of business

Reserves
overestimated

Catastrophe
losses in FL

Reserves
underestimated

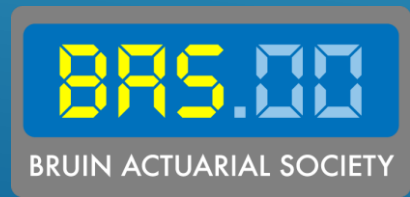
Slide Design

- In this example, we aren't exactly proposing a "solution". Read the case carefully—if a solution is required, then simply explaining why we have an issue is not sufficient.
- You can always try to cut down on words while keeping the general idea. Don't make your audience read! Make them listen to what you have to say.

Additional Miscellaneous Tips

- **Start with an agenda.** You want your audience to know what you're going to tell them.
- **Number your slides.** This will make it easier for judges to refer to specific slides.
- **Make sure text is large and contrasts with the background.**
- **Keep a consistent color scheme throughout.** If you use red for automobile and purple for truck, keep it that way for the entire presentation.

PRESENTATION TIPS



Presentation Tips

- This likely goes without saying, but **practice, practice, practice!** If you don't put in the time, it'll be quite obvious.
- Some people like to script what they're going to say; others prefer to just talk about their portion.
 - If you choose to use a script, **don't memorize the script.** It should be a guideline, not what you're going to say word-for-word.
 - People who memorize a script generally sound quite robotic, and it's awkward if you forget what you're going to say.

Presentation Tips

- Assume your target audience is **upper management** (think: VP, COO, etc.), **not** a chief actuary.
 - KISS: “Keep it simple, stupid”
 - Although these individuals will generally have a working understanding of what “pricing”, “reserving”, and “predictive modelling” entail, they are not familiar with the intricacies of each.
 - They are much more concerned about how your results impact the company as a whole.

Presentation Tips

- This doesn't mean to dumb things down, but you should pay attention to what management would be concerned about.
 - This means you should **focus more on the results and the impact**, and less on the exact methodology and every single technical step.
 - They will generally place some faith in your technical expertise, since you are the actuaries.
 - **Exception:** If you get a technical question during Q&A, you may present a technical answer.

Presentation Tips

- **Face the audience**, not your slides. If you need to look at the slides, find some excuse to reference the slides.
 - For instance, if there's a graph or chart on the slide, you may want to turn to point at the figure.
 - This is another reason your slides should not contain too many words!
- **Speak slowly and clearly.** You will likely rush when you're nervous, so make sure to actively remember to slow yourself down.

Presentation Tips

- **Practice the transitions** between different group members' portions.
 - This means you should know when the previous presenter is done presenting.
 - Warning: Don't just memorize a few key words, because your teammate might end with a slightly different phrase!
- **Reference what your groupmates talked about when necessary.** You want the presentation to seem like one cohesive presentation, not four separate sections.

Presentation Tips

- Remember to **introduce yourself, the problem, and your solution**. Make sure your audience immediately knows what the trajectory of your presentation will be.
- **Plan for the worst**. It's possible that someone will forget what to say or make a minor mistake.
 - If this happens, you should be familiar enough with each others' parts (after all, you worked on the presentation as a team) to fill something in.
 - E.g. "To add on to / clarify what _____ was saying, ..."

Presentation Tips: Question & Answer

- Consider what you struggled with when actually solving the case.
 - What decisions were hard to make as a group?
 - What were some areas of disagreement during group discussions?
 - What parts of the problem were you unable to solve “correctly”? What did you end up using in place of a “correct” answer?
 - What assumptions did you make? Are they realistic? How would your analysis change if those assumptions didn’t hold?
 - If you could have more data, how would you improve your analysis? This indicates where the weaknesses of your analysis lie.

Presentation Tips: Question & Answer

- (Try to) plan who will answer what type of question.
 - E.g. people answer questions about their slides, or one designated person for technical questions, etc.
- Give everyone a chance to answer questions. If you get a “easy” question, let the least experienced group member answer. This clears the way for the more experienced teammate(s) to answer the harder questions.

Presentation Tips: Question & Answer

- “I don’t know” is **not** a valid answer. The judges expect that you may not know the answer to some of the questions, but you should try to come up with *some* insight.
- Sometimes, certain questions will highlight mistakes you have made or details you missed during your analysis
 - Don’t get flustered—simply acknowledge that the judge has brought up a point you failed to consider.
 - If you can, expand on how you would’ve conducted your analysis differently and how the results might have differed.

Questions?

Upcoming events:

- Excel Review **tomorrow**
- Kickoff meeting **Thursday**
 - Team registration and case delivery will be on this day!