

Inconceivable! Pricing Scenarios

Dereck Tanaka
Travelers Insurance, Inc.

CAS Virtual RPM Seminar
March 2022

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and
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Get ready for Live Polling!

1

1

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2

2

Additional Disclaimer

- *The views expressed in this presentation do not necessarily reflect the views of the panelists, their employers, or the CAS. This presentation is for general informational purposes only.*

3

3

Agenda

- Quick review of the Professionalism Documents
- Four Scenario-Based Discussions
 - Audience Participation Via Live Polling
 - Discussion!

Ground Rules

- We may need to limit discussion on an item for the sake of time
- Please stay away from company specifics
- Engagement through the chat and Q&A features is encouraged
- Participate in all the interactive polls

4

4

Learning Objectives

- Discuss professionalism implications of pricing and modeling practices
- Identify guidance in actuarial professionalism standards that can be applied to pricing and modeling
- Recommend solutions to potential ethical conflicts
- Have fun along the way!

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1. Have you attended “Professionalism in Pricing and Predictive Modeling” at prior CAS RPM Conferences?

(aka “The Next Generation” in 2019 - Boston)

(aka “Back to the Future” in 2020 - Virtual)

(aka “Professionalism, Uh, Finds a Way” in 2021 – Virtual)



- A. Yes – Once
- B. Yes – More than once
- C. No
- D. I don't remember!

6

6

Credit to prior presenters:

- Madeline Main
- Jarrett Cabell
- Elizabeth Demmon Storm
- Rick Sutherland



(aka "The Next Generation" in **2019** - Boston)

(aka "Back to the Future" in **2020** - Virtual)

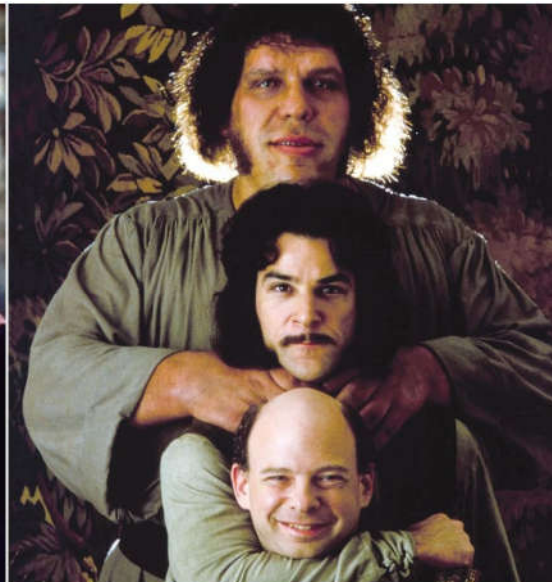
(aka "Professionalism, Uh, Finds a Way" in **2021** - Virtual)



7

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We will reveal the theme...as you wish...



8

8

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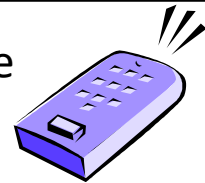
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9

9

2. How many times have you watched “The Princess Bride”?



- A. Never – I’m about as cool as Prince Humperdinck.
- B. Only once
- C. Multiple times
- D. Enough times that I made the priest incorporate it into my wedding ceremony
- E. I’ve only read the book!



10

10

3. Who's your favorite character from the movie?



- A. Westley
- B. Buttercup
- C. Fezzik
- D. Inigo Montoya
- E. Other (tell us who!)



11

11

Inconceivable! Professionalism Scenarios

- Let's assume the Code of Conduct, Statement of Principles, and ASOPs apply *across the entire kingdom of Florin and beyond, including the Cliffs of Insanity, Fire Swamp, and Pit of Despair.*

12

12

Navigating Professionalism References

- [Code of Professional Conduct](#) (2001)
 - 14 Precepts
 - Adopted by all five U.S.-based actuarial organizations, including CAS, SOA, and AAA
- [CAS Statements of Principles](#) (1988-89, 2015)
 - 4 Principles
 - Rescinded in 2020 and reinstated in 2021
- [ASB Actuarial Standards of Practice](#) - ASOPs
 - 56 (numbered) Standards. Of these:
 - 4 have been repealed
 - 10 are [General](#) (apply to actuaries in all fields of practice)
 - 3 apply specifically to [Enterprise Risk Management](#) (ERM)
 - 11 apply specifically to [Property & Casualty](#)

13

13

Code of Professional Conduct

- **Precept 1 Professional Integrity**
- **Precept 2 Qualification Standards**
- **Precept 3 Standards of Practice**
 - Must satisfy and keep current with all ASOPs

Code of Professional Conduct

EFFECTIVE JANUARY 1, 2001, the five U.S.-based actuarial organizations adopted this Code of Professional Conduct. It was adopted by the Board of Directors of the American Academy of Actuaries on September 28, 2000, and applies to all members.

The Code of Professional Conduct sets forth what it means for an actuary to act as a professional. It identifies the responsibilities that actuaries have to the public, to their clients and employers, and to the actuarial profession.

The Board of the American Academy of Actuaries thanks the Joint Committee on the Code of Professional Conduct for their hard work and perseverance in drafting the Code and obtaining the approval of all five organizations' boards.

Code of Professional Conduct

The purpose of this Code of Professional Conduct ("Code") is to require Actuaries to adhere to the high standards of conduct, practice, and qualifications of the actuarial profession, thereby supporting the actuarial profession in fulfilling its responsibility to the public. An Actuary shall comply with the Code. An Actuary who commits a material violation of the provisions of the Code shall be subject to the profession's counseling and discipline procedures.

The Precepts of the Code identify the professional

...fied otherwise by an agreement between a Recognized Actuarial Organization for any such jurisdiction and the organizations that have adopted the Code.

Laws may also impose obligations upon an Actuary. Where requirements of Law conflict with the Code, the requirements of Law shall take precedence.

An Actuary must be familiar with, and keep current with, not only the Code, but also applicable Law and rules of professional conduct for the jurisdictions in which the Actuary renders Actuarial Services. An Actuary is responsible for securing translations of such Laws or rules of conduct as may be necessary.

DEFINITIONS

As used throughout the Code, the following terms are capitalized and have the meanings indicated.

► **Actuarial Communication:** A written, electronic, or oral communication issued by an Actuary with respect to Actuarial Services.

► **Actuarial Services:** Professional Services provided to a Principal by an individual acting in the capacity of an actuary. Such services include the rendering of advice, recommendations, findings, or opinions based upon actuarial considerations.

► **Actuary:** An individual who has been admitted to a class of membership to which the Code applies by action of any organization having adopted the Code. When the term "actuary" is used without being capitalized, it re-

14

14

Code of Professional Conduct

- **Precepts 4, 5 and 6: Communications and Disclosure**
- **Precept 7: Conflict of Interest**
- **Precept 8: Control of Work Product**
- **Precept 9: Confidentiality**

15

15

Code of Professional Conduct

- **Precept 10: Courtesy and Cooperation**
- **Precept 11: Advertising**
- **Precept 12: Titles and Designations**
- **Precepts 13 and 14: Violations of the Code of Professional Conduct**

16

16

CAS Ratemaking SOP – 4 Principles

Principle 1: A rate is an estimate of the expected value of future costs.

Principle 2: A rate provides for all costs associated with the transfer of risk.

Principle 3: A rate provides for the costs associated with an individual risk transfer.

Principle 4: A rate is reasonable and not excessive, inadequate, or unfairly discriminatory if it is an actuarially sound estimate of the expected value of all future costs associated with an individual risk transfer.

17

17

Other Relevant References – Ratemaking & Modeling

- [ASOP 12 – Risk Classification](#) (2005)
- [ASOP 23 – Data Quality](#) (2016)
- [ASOP 25 – Credibility Procedures](#) (2013)
- [ASOP 29 – Expense Provisions in P&C Ratemaking](#) (1997)
 - **Exposure draft open for comments until May 31, 2022**
- [ASOP 30 – Profit & Contingency Provisions in P&C Ratemaking](#) (1997)
- [ASOP 38 – Catastrophe Modeling \(for All Practice Areas\)](#) **(Dec. 1, 2021)**
 - **Renamed from “Models Outside Area of Expertise”**
- [ASOP 41 – Actuarial Communications](#) (2010)
- [ASOP 53 – Estimating Future Costs](#) (2018)
- [ASOP 56 – Modeling](#) (2020)
- [Proposed new ASOP – Setting Assumptions](#) **(Third exposure draft; no longer open for comments)**

18

18

Scenario 1: The One True Price

- Buttercup is looking to start her own insurance company in Florin, called As You Wish Insurance Company (AYW).
- She dreams to provide affordable and fair homeowners coverage to all villagers, rich or poor.
- She noticed that with recent years' population growth in Florin, more villagers were forced to move closer to the fire swamp in order to find more affordable housing options.
- Unfortunately, the region that needs the most help with insurance coverage now is this newly developed area near the dangerous fire swamp. Buttercup needs to fix this!



- Buttercup learned most insurance companies in Florin refuse to provide coverage to homes near the fire swamp.
- Being new to the insurance industry and not having any experience data or actuaries wanting to help her, she is left with no choice but to reference another company's rates.

19

19

Scenario 1: The One True Price



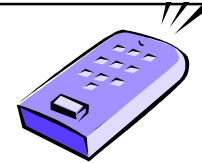
- And with that, Buttercup began her competitive market analysis.
- Dread Pirate Roberts Insurance (DPR) has been offering insurance coverage in Florin for many years and is one of the leading insurance companies in Florin today.
- The majority of DPR Insurance policyholders have homes located near the castle and further away from the fire swamp. However, they did write a few homes near the fire swamp.
- Buttercup isn't 100% sure if DPR Insurance would be the right choice to follow. However, based on her market research, other insurance companies operating in Florin seem to reject all homes near fire swamp, making them even less ideal than DPR Insurance.



20

20

4. Scenario 1, Question 1



How should Buttercup set the rates for her new insurance company, AYW Insurance?

- A. Adopt DPR's current rating as is. There are no other choices!
- B. Adopt DPR's current rating, but review and adjust the risk classifications to better reflect the increase in exposure to fire swamp.
- C. Adopt DPR's current rating as is, but make sure to disclose any uncertainty Buttercup might have.
- D. Adopt DPR's current rating and add a "Fire Swamp exposure" rating variable.
- E. Other (if you choose this option, please explain in the chat!)

21

21

Scenario 1 Discussion

Which ASOPs apply to this scenario?

- ASOP 12 – Risk Classification (for All Practice Areas)
- ASOP 53 – Estimating Future Costs for Prospective P&C Risk Transfer and Risk Retention

Are DPR's risk classifications reasonable for AYW Insurance? (ASOP 12)

- Section 3.2.1: The actuary should select risk characteristics **that are related to expected outcomes**. [...] In demonstrating a relationship, the actuary may use relevant information from any reliable source, including statistical or other mathematical analysis of available data.
 - The actuary may also use clinical experience and expert opinion. **Rates within a risk classification system would be considered equitable if differences in rates reflect material differences in expected cost for risk characteristics.**
 - In the context of rates, **the word fair is often used in place of the word equitable.**
 - To the extent the actuary expects the **interdependence to have a material impact** on the operation of the risk classification system, **the actuary should make appropriate adjustments**. Sometimes it is appropriate for the actuary to make inferences without specific demonstration.

22

22

Scenario 1 Discussion

Are DPR's risk classifications reasonable for AYW Insurance? (ASOP 12 continued...)

- Section 3.3: A risk classification system assigns each risk to a risk class based on the results of measuring or observing its risk characteristics. [...] actuary should consider and document any known significant choices or judgments made, whether by the actuary or by others, with respect to the following
 - 3.3.1: The actuary should select a risk classification system that is appropriate for the intended use. Different sets of risk classes may be appropriate for different purposes.
- Section 3.4.3 If the risk classification system has changed, or if business or industry practices have changed, the actuary should consider testing the effects of such changes in accordance with the guidance of this standard.

23

23

Scenario 1 Discussion

Should competitor's rating be relied on completely at face value? (ASOP 53)

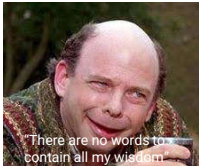
- Section 3.10: If the actuary is estimating the future cost for a new coverage or exposure, and the historical loss and loss adjustment expenses are either unavailable, limited, or not fully representative of the new coverage or exposure, [...] actuary should consider the following in selecting data and developing methods, models, or assumptions for use in estimating the future costs:
 - data from coverages or exposures that are similar to the new coverage or exposure;
 - data on the phenomenon or events that are contemplated by the new coverage or exposure;
 - differences between coverages or exposures with available relevant data and the new coverage or exposure; and
 - appropriate adjustments to the available relevant data to reflect expected differences identified in section 3.10(c).

24

24

Scenario 1: The One True Price, Continued

- AYW Insurance took off and Buttercup has been able to provide insurance coverage to most homes near the fire swamp!
- She is now providing affordable insurance to the villagers, but the loss ratio on her book of business is not great.
- Luckily! This time, an actuary named Westley is willing to help her.
- Westley found out the DPR Insurance rates AYW adopted were actually from another insurer named Vizzini Insurance who got their rates from Rugen Insurance.
- Westley re-confirmed neither of the two insurers writes any homes near the fire swamp. *This wasn't obvious in the rating manual; he had to dig through the UW rules.*
- DPR's UW rules weren't as strict, but they only wrote homes built with fire resistive materials rather than wood frames. Wood frame homes were only written near the castle.

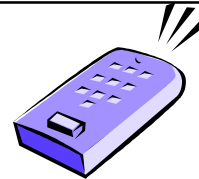


- The rates DPR has for building attributes do not vary by location and are not appropriate for wood frame homes closer to the fire swamp.
- AYW policies were homes built with mostly wood (because they were cheaper) and less protective against the fire swamp. **Adverse Selection!!!**

25

25

5. Scenario 1, Question 2



How should Westley explain to Buttercup that she needs address the rates, even if this means the rates will become higher for homes near the fire swamp?

- Explain the importance of addressing adverse selection
- Explain what a "fair" rate truly means
- Explain adjustments that she should consider when setting rates
- All of the above

26

26

Scenario 1 Discussion

Which ASOPs apply to this scenario?

- ASOP 12 & ASOP 53
- SOP4
- ASOP 39: Treatment of Catastrophe Losses

What does the Statement of Principles say about “reasonable rate”?

- **Principle 4:** A rate is reasonable and not excessive, **inadequate**, or unfairly discriminatory if it is an actuarially sound estimate of the expected value of all future costs [...].

What is the impact of Adverse Selection?

- **ASOP 12**
 - Section 3.4.1: Adverse selection can **potentially threaten the long-term viability of a financial or personal security system**.
 - The actuary should **assess** the potential effects of adverse selection that may result or have **resulted from the design or implementation of the risk classification system**.
 - Whenever the effects of adverse selection are expected to be material, the actuary should, [...] **estimate the potential impact and recommend appropriate measures to mitigate the impact**

27

27

Scenario 1 Discussion

How should AYW Insurance address the current issue?

- **ASOP 12**
 - Section 3.4.2: The actuary should consider **using a different set of risk classes for testing long-term viability** than was used as the basis for determining the assigned values if this is likely to improve the meaningfulness of the tests
- **ASOP 53**
 - Section 3.1: The actuary should **determine the elements that are appropriate to include in the future cost estimate**.
 - Section 3.5: The actuary should select **appropriate methods or models consistent with the intended measure for each element of the future cost**. The actuary should use reasonable assumptions (including parameters) appropriate to each method or model.
 - Assumptions may be implicit or explicit and may involve interpreting available experience, **projecting future experience**, or **adjusting for changes in conditions** affecting the available experience.
 - Section 3.8.4: The actuary should **consider whether additional adjustments** to the historical data are needed to reflect the environment expected to exist in the period for which the future costs are being estimated.

28

28

Scenario 1 Discussion

How should AYW Insurance address the current issue? (Cont....)

- **ASOP 39**

- Section 3.1: The actuary **should take reasonable steps to identify the perils or events that have the potential to generate catastrophe losses** that differ materially from the expected aggregate losses or the expected distribution of losses.
- Section 3.3.2: If the actuary believes that the **available historical insurance data do not sufficiently represent the exposure to catastrophe losses**, the actuary should consider doing one of the following:
 - use noninsurance data to adjust the historical insurance data;
 - use noninsurance data (including models based thereon) as input to ratemaking procedures; or
 - use models based on a combination of historical insurance data and noninsurance data.
- Section 3.4 [...]The presence or **absence of catastrophes** in any historical data used [...] can create biases that diminish the appropriateness of using that data as the basis for future cost estimates. The actuary should **address such biases by adjusting the historical data [...]**. The actuary **may employ other considerations and methods to adjust for catastrophes** associated with casualty coverages.

29

29

Scenario 2: Rodents of Unusual Size

- You are an actuary for As You Wish Insurance Company, which now also sells coverage for personal horses and carriages.
- Fire Swamps exist throughout the land and consist of three primary dangers: flame spurts, sinking sand, and rodents of unusual size.
- When AYW first launched their horse & carriage program, you had limited data to work with and me too-ed the territory definitions from Reiner Insurance Company. In their filing, they described how they defined their territory boundaries and developed relativities.
- They used a spatial smoothing process, based on distance-based smoothing, to develop separate territory definitions by coverage. They fit the territory definitions in individual coverage GLMs to develop the indicated relativities they ultimately filed.
- The process they described seemed technically sound and the assumptions reasonable, so you did not have any concerns about using their definitions in rating. You initially adopted both their definitions and their relativities.

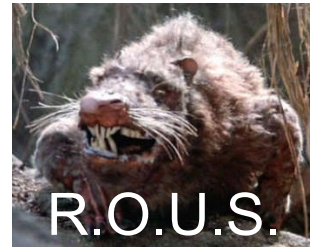


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Scenario 2: Rodents of Unusual Size

- You have now in been in business for three years and the personal horse and carriage book of business has grown.
- You don't quite have enough data to redefine territory boundaries but you do have a volume of data you feel comfortable using to refresh your GLMs. You update your models with all current rating variables fit on the latest data to get revised relativities.
- You review the models to identify any potential new variables for use in rating. You notice the comprehensive model indicates a steep surcharge for prior claims over the past three years related to collisions with an R.O.U.S.
- You are surprised to see additional signal in a variable you expected to be captured by territory and are debating whether you should include it in your model and rating algorithm.



31

31

6. Scenario 2, Question 1



What considerations should you take into account when evaluating whether you should use this variable in rating?

32

32

Scenario 2 Discussion

Which ASOPs apply to this scenario?

- ASOP 23 – Data
- ASOP 56 – Modeling

ASOP 23 – Data

- Section 3.2.b: The actuary should take into account the scope of the assignment and the intended use of the analysis....and select data for the analysis with consideration of the following:
 - 1. whether the data constitute appropriate data, including whether the data are **sufficiently current**
 - 2. whether the data are reasonable with particular attention on **internal consistency**
 - 4. the degree to which the data are **sufficient**
 - 5. any **known significant limitations** of the data
- Section 3.3.b: ...the actuary should consider taking further steps, when practical, to **improve the quality of the data**

33

33

Scenario 2 Discussion

ASOP 56 – Modeling

- Section 3.1.1: When the actuary designs, develops, or modifies the model, the actuary should confirm...the capability of the model is consistent with the intended purpose. Items the actuary should consider:
 - a. the level of detail built into the model
 - **b. the dependencies recognized**
 - c. the models' ability to identify possible volatility of output
- Section 3.1.2: When selecting, reviewing, or evaluating the model, the actuary should confirm that, in the actuary's professional judgment, the **model reasonably meets the intended purpose.**
- Section 3.1.6.d: Appropriateness of Input in Current Model Run – Where practical and appropriate, the actuary **reusing an existing model** should evaluate whether input unchanged from a prior model run is still appropriate for use in the current model run.

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34

Scenario 2 Discussion

ASOP 56 – Modeling

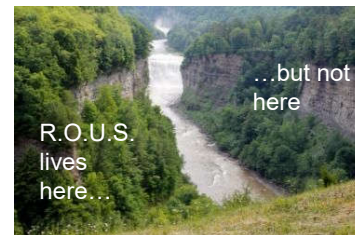
- Section 3.6.1: ...the actuary should perform sufficient testing to ensure that the model reasonably represents that which is intended to be modeled. Model testing may include the following:
 - c. running tests of variations on key assumptions used as inputs to test that changes in output are consistent with expectation given the changes in the input (i.e., **sensitivity testing**)
- Section 3.6.2: The actuary should validate that the model output reasonably represents that which is being modeled:
 - a. **testing**...preliminary model output **against historical actual results**
 - b. evaluating whether the model applied to **hold-out data** produces model output that is reasonably consistent
 - d. performing **statistical or analytical tests** on model output to assess their reasonableness
 - e. comparing model output of those to an **alternative model(s)**

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Scenario 2: Rodents of Unusual Size, continued

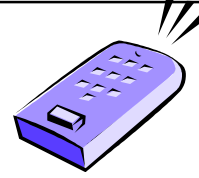
- As you're continuing to debate your decision regarding the number of prior R.O.U.S. claims, the customer service department alerts you to an uptick in a certain kind of policyholder complaint.
- Numerous wealthy policyholders have moved across the ravine to avoid the triple threat of the nearby Fire Swamp. While their home insurance costs decreased as expected, they are not experiencing a corresponding decrease in their horse & carriage premiums.
- After further investigation, you remember the territory boundaries you used from the Reiner Insurance filing are distance-based, rather than adjacency-based. The smoothing algorithm considered the two zip codes to be neighbors, even though they are separated by a deep ravine.
- You are now entirely uncertain on how to proceed, not only with the R.O.U.S. claim variable, but with territory as a whole.



36

36

7. Scenario 2, Question 2



How do you proceed?

- A. Continue with the territory definitions you currently have
- B. Continue with the territory definitions you currently have but look for additional variables to include in the models which could compensate for any flaws in the underlying assumptions
- C. Me too a different competitor filing that used adjacency based smoothing and use those definitions in the models instead
- D. Use your own data to develop territory boundaries and relativities
- E. Other (if you choose this option, please explain in the chat!)

37

37

Scenario 2 Discussion

ASOP 56 – Modeling

- Section 3.1.4 Model Structure: The actuary should consider the following, as applicable, for a particular model:
 - c. whether the use of the model dictates a particular level of detail or whether a **certain level of detail in the output is needed to meet the intended purpose**
 - d. whether there is a material **risk of the model overfitting** the data
- Section 3.4 Reliance on Models Developed by Others: The actuary should make a reasonable attempt to have a basic understanding of the model, including the following, as appropriate:
 - a. the designer's or developer's **original intended purpose** for the model
 - c. **major sensitivities and dependencies within the model**
 - d. **key strengths and limitations of the model**

38

38

Scenario 2 Discussion

ASOP 56 – Modeling

- Section 3.5 Reliance on Experts: The actuary may rely on experts in the fields of knowledge used in development of the model.
 - a. whether the individual or individuals upon whom the actuary is relying are experts in the applicable field
 - b. the extent to which the model has been reviewed or validated by experts in the applicable field
 - d. whether the science underlying the expertise is likely to produce useful models for the intended purpose
- Section 4.1 Required Disclosures in an Actuarial Report:
 - c. unreasonable output resulting from the aggregate of assumptions, if material
 - d. material limitations and known weaknesses
 - e. extent of reliance on models developed by others

39

39

Scenario 2 Discussion

ASOP 23 - Data

- Section 3.2.b.6: The actuary should select the data for the analysis with consideration of the following: the availability of additional or alternative data and the benefit to be gained from such additional or alternative data, balanced against how practical it is to collect and compile such additional or alternative data.
- Section 3.4 Use of Data: ...the actuary should make a professional judgment about which of the following are applicable:
 - a. the data are of acceptable quality to perform the analysis
 - b. the data require enhancement before the analysis can be performed
 - d. judgmental adjustments or assumptions can be applied to the data that allow the actuary to perform the analysis

40

40

Scenario 3: CGL (Castle General Liability)

- Fezzik is an actuary who works for Inconceivable Insurance. He has been tasked with pricing large deductible General Liability renewal coverage for the Florin castle. He considers this project no hassle.
- One pricing assumption required is selecting an appropriate trend for the prospective pricing period. How to choose a method? There are a myriad!



- While claim frequency has been relatively stable, Fezzik notices average claim severity has increased faster than relevant price indices.
- He observes a common cause of slip/trip/fall claims has been pedestrians falling down a steep hill on the castle premises.
- Historically, the average bodily injury incurred loss and expense amounts were relatively small on such claims. Recently, these claims have seen the most drastic increase in cost.

41

41

Scenario 3: CGL (Castle General Liability)

- Inconceivable Insurance's claim department informs Fezzik average claim costs have been rising quickly likely due to a higher portion claimants coming to king's court with attorney representation on such slip/trip/fall claims.
- The claim department provides data showing increasing number of filed civil suits in the same local jurisdiction as the castle, and Fezzik selects a trend for his pricing analysis giving weight to that data.

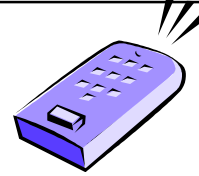


- Upon peer review, Fezzik's manager raises concerns about using the filed civil suits data to select a trend.

42

42

8. Scenario 3, Question 1



Which of these may be a valid concern about Fezzik's use of the civil suits data according to ASOP 13: Trending Procedures?

- A. Non-insurance data should not be leveraged.
- B. There may be biases or distortions in the data.
- C. The data is mostly related to social influences and should not be considered.
- D. Fezzik's method isn't what was used previously, or a common actuarial method.

Use the chat to discuss what other ASOPs might be relevant to help Fezzik!

43

43

Scenario 3 Discussion

How might ASOP 13: Trending Procedures guide Fezzik?

Should we use the data?

- Section 3.2: ...The data can consist of **historical insurance or non-insurance information**.
Other considerations:
 - the credibility assigned to the data by the actuary;
 - the time period for which the data is available;
 - the predictive versus explanatory value of the data; and
 - the **effect of known biases or distortions** on the data relied upon

Can we consider Economic and Social Influences?

- Section 3.3: The actuary **should consider economic and social influences** that can have a significant impact on trends in selecting the appropriate data to review, the trending calculation, and the trending procedure.

44

44

Scenario 3 Discussion

Is it a valid Trending Procedure?

- Section 3.4: The actuary should select trending procedures after appropriate consideration of available data. In selecting these procedures, the actuary may consider relevant information such as the following:
 - procedures established by precedent or common usage in the actuarial profession;
 - procedures used in previous analyses;
 - procedures that predict insurance trends based on **insurance, econometric, and other non-insurance data**; and
 - the context in which the trend estimate is used in the overall analysis.

Other considerations or ASOPs that may apply:

- Section 3.7: When relying on data or other information supplied by others, the actuary should refer to ASOP No. 23, Data Quality, for guidance.
- Fezzik should refer to ASOP 25: Credibility for guidance on how much weight to give to the filed suits data.

45

45

Scenario 3: Castle General Liability, Continued

- After choosing an appropriate trend method, Fezzik's selected trend factor is much higher than the previously selected factor, which was made by another actuary, Count Rugen.
- Upon reviewing Count Rugen's prior work, Fezzik believes it to be a very optimistic trend selection.
- He overhears coworkers gossiping that Count Rugen was often eager to make his indications "look good" to business partners.
- Fezzik suspects Count Rugen may have violated Precept 3 (Actuarial services satisfy applicable standards of practice) of the Code of Professional Conduct by using an inappropriate method to lower his trend indications.

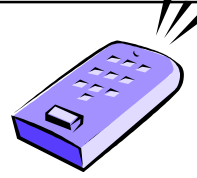


Count Rugen

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9. Scenario 3, Question 2



How could Fezzik address Count Rugen's possible violation?

- A. Nothing is needed, given it was old work and Fezzik's analysis will replace it.
- B. Consider discussing the situation with Count Rugen to resolve the perceived violation.
- C. Request guidance from the Actuarial Board for Counseling and Discipline (ABCD).
- D. File formal a complaint with the ABCD and let them investigate.
- E. Other (if you choose this option, please explain in the chat!)

47

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Scenario 3 Discussion

What might guide Fezzik about a perceived violation?

- These all may be reasonable next steps, depending on the circumstance.

How does the Code of Professional Conduct apply?

- Precept 1: Professional Integrity
 - Act honestly, with integrity and competence, and in a manner to fulfill the profession's responsibility to the public and to uphold the reputation of the actuarial professional
- Precept 3: Standards of Practice
- Precept 9: Confidentiality
- Precept 10: Courtesy and Cooperation
 - Discussions of differences...should be conducted objectively and with courtesy and respect.
 - Nothing in the Code should be construed as preventing the Actuary from expressing such an alternative opinion to the Principal.

48

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Scenario 3 Discussion

What does the Code of Professional Conduct say Fezzik should do?

- Precept 13: An Actuary with knowledge of an apparent, unresolved, material violation of the Code by another Actuary should **consider discussing the situation with the other Actuary** and attempt to resolve the apparent violation.
- If such discussion is not attempted or is not successful, the Actuary **shall disclose such violation to the appropriate counseling and discipline body** of the profession, except where the disclosure would be contrary to Law or would divulge Confidential Information.
 - Annotation 13-1: A violation of the Code is deemed to be **material if it is important or affects the outcome of a situation**, as opposed to a violation that is trivial, does not affect an outcome, or is one merely of form.

49

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Scenario 3 Discussion

What could Fezzik go to the ABCD for?

- Within its jurisdiction (the five main U.S. actuarial organizations), the ABCD investigates complaints, counsels actuaries where deemed appropriate, recommends a disciplinary action, or mediates issues between members.
- **Guidance for Actuaries:** Requests for guidance are questions raised by an actuary about the proper interpretation of the Code(s) of Professional Conduct or the standards, but which are **not complaints alleging or suggesting a violation** by another actuary.
- **File a formal complaint:** A written description of what the actuary did (or failed to do) that might be a material violation of the Code of Professional Conduct.
 - You do not have to be a member of an actuarial organization to make a complaint.
 - Complaints must be submitted in writing.
 - You will be identified to the actuary who is the subject of your complaint
- **Submit anonymous information:** alternative to a formal complaint to keep identity confidential, and sometimes can satisfy an actuary's Precept 13 obligation.
 - An ABCD inquiry may also be commenced if the ABCD receives information for which... the information comes from a **known source (such as a signed document or a published journal)** and indicates that the conduct of an actuary ... may have violated the applicable Code(s) of Professional Conduct.

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Scenario 4: Management's Revenge



- After his adventurous career as a kidnapper for hire, Inigo Montoya follows his prior employer, Vizzini, to his newest venture in insurance and becomes a credentialed actuary. Prince Humperdinck owns Poisoned Chalice Insurance Company and Vizzini works there as his right-hand man, overseeing product and pricing related to vehicle insurance.

- Humperdinck and Vizzini want to include the following variables in the new rating plan Inigo is developing: height, occupation, mustache indicator, type of horse ridden, if the policyholder is a sword owner, fondness for speaking in rhyme, number of prior life-saving visits to Miracle Max, and proximity to Fire Swamps.

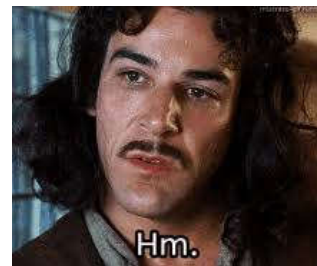


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Scenario 4: Management's Revenge

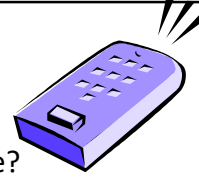
- While some these seem to be legitimate rating variables, Inigo, a mustachioed man himself, suspects Humperdinck and Vizzini may be driven by past encounters with a few particular swashbucklers.
- Humperdinck and Vizzini are insistent that the surcharges should be implemented, as some are supported by one way loss ratio analyses, some are indicated in the model, and, of course, because actuarial judgement is always a part of making pricing decisions.
- They direct Inigo to complete the rating algorithm with the inclusion of these variables, compile support for the Florin DOI, and submit the filing for approval.



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10. Scenario 4, Question 1



Are they right? Can Inigo use these variables? Should he?

- A. He can use any of the variables.
- B. He can use any of the variables supported by one of the two analyses (one or two-way loss ratio analyses; GLMs) he performs.
- C. He can use the variables if they are supported by the GLM.
- D. He can only use the variables that are supported and within control of the policyholder.
- E. He can't use all the variables directly, but he can look for other correlated variables that may be accepted by regulators in order to appease his bosses.
- F. Other (if you choose this option, please explain in the chat!)

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Scenario 4 Discussion

Which ASOPs apply to this scenario?

- ASOP 12 – Risk Classification

Are rating variables allowed?

- Section 3.2: When selecting which characteristics to use in a risk classification system, the actuary should consider the following:
 - Relationship of Risk Characteristics and Expected Outcomes:
 - A relationship between a risk characteristics and an expected outcome, such as cost, is demonstrated **if it can be shown that the variation in actual or reasonably anticipated experience correlates to the risk characteristics.**
 - The actuary may use **relevant information from any reliable source**, including statistical or other mathematical analysis of available data.
 - The actuary may also use **clinical experience and expert opinion.**
 - The actuary should consider the **interdependence of risk characteristics.**
 - Sometimes it is appropriate for the actuary to **make inferences without specific demonstration.**

54

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Scenario 4 Discussion

Are the rating variables allowed?

- Section 3.2: When selecting which characteristics to use in a risk classification system, the actuary should consider the following:
 - Causality
 - Objectivity
 - Practicality
 - Applicable Law
 - Industry Practices
 - Business Practices
- Section 3.3.1.: The actuary should select a risk classification system that is appropriate for **the intended use**.

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Scenario 4 Discussion

What about the statement of principles?

- **Principle 1:** A rate is an estimate of the **expected value of future costs**.
- **Principle 2:** A rate provides for **all costs** associated with the transfer of risk.
- **Principle 3:** A rate provides for the costs associated with an **individual risk transfer**.
- **Principle 4:** A rate is reasonable and not excessive, inadequate, or unfairly discriminatory if it is an actuarially sound estimate of the **expected value of all future costs** associated with an **individual risk transfer**.

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Thank you for your participation!



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