


Impacts Across the Firm: Commercial Lines Pricing Systems

Presentation by **Dustin Duncan, Kevin Madigan, Steve Walsh**
March 2021

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Today's Speakers



Steve Walsh, FCAS, FSA
Director, PwC
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Background and relevant experience

Steve's focus is applying predictive analytics and actuarial research to underwriting and pricing in property & casualty insurance. He has twenty-five years of experience split between consulting and carriers with personal and commercial insurance examples including:

- Applied advanced analytics for improved risk segmentation
- Developed new underwriting products and guidelines to address moral hazards, round-out coverage, and improve customer service
- Developed straightforward underwriting appetite tools for distribution agents
- Managed regulatory relations and processes

Education and certifications

Steve is a former insurtech Chief Underwriting Officer, actuary (FCAS, FSA), and certified Data Scientist. He holds an MBA (Baker Scholar) from Harvard Business School, and BS (summa cum laude) from The Wharton School, University of Pennsylvania.



Kevin Madigan, ACAS, CERA, MAAA
Senior Consultant, Gross Consulting
Managing Principal, Genuine Risk Advisors LLC
(518) 596-8358; kevin@genuineriskadvisors.com

Background and relevant experience

Kevin focuses on the intersections of pricing, underwriting, reserving, and ERM. He has over twenty-five years of actuarial experience split between primary carriers, reinsurers, run-off entities, and consulting, including:

- Large account pricing for a top national carrier
- Reinsurance pricing (standard casualty, property, and multiline treaties; highly structured alternative risk transfer programs)
- Deputy CUO for a Bermuda based property reinsurer
- Designing, building, implementing, and/or validating dynamic risk models for pricing or ECM applications

Kevin also has significant reserving experience.


Education and certifications

Kevin is an Associate of the Casualty Actuarial Society, a Chartered Enterprise Risk Analyst, and has served on and/or chaired several CAS, AAA, and ASB committees over his career. He holds a PhD and an MA in Mathematics from the University at Albany and a BS in Mathematics from Auburn University.

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2021 Reinsurance, Product and Modeling Seminar

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Today's Speakers



Dustin Duncan, FCAS, MAAA
Director, Head of US Operations, RPC Tyche
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Background and relevant experience

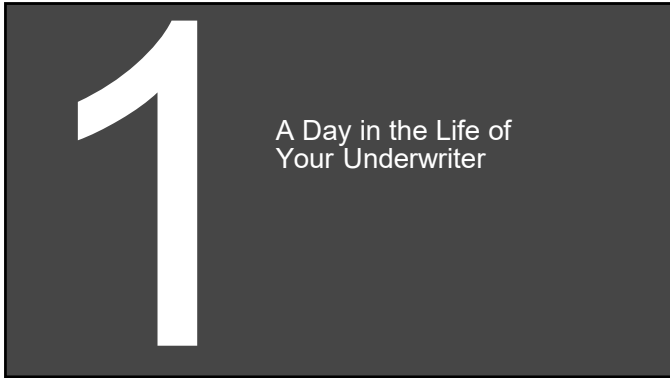
Dustin's focus is on helping insurers modernize and improve their systems and modeling platforms. He has over seven years of property & casualty insurance experience including:

- Designed, built and deployed large account / reinsurance pricing and underwriting systems
- Designed and deployed integrated catastrophe accumulation monitoring systems
- Built and implemented capital models
- Applied advanced analytics to improve ratemaking and claims processes

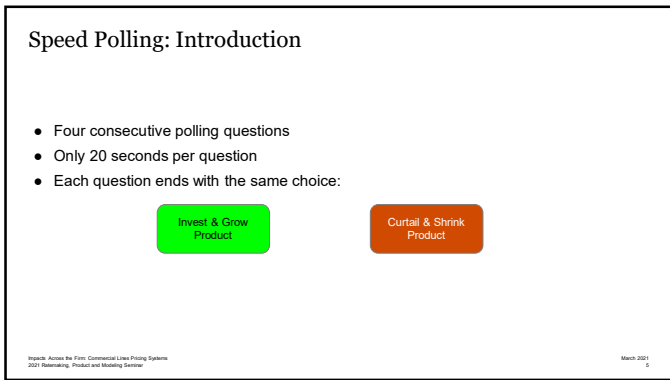
Education and certifications

Dustin was formerly a Principal at Oliver Wyman Actuarial Consulting. He is a Fellow of the Casualty Actuarial Society, a Member of the American Academy of Actuaries, a Member of the CAS Ratemaking, Product and Modeling Seminar Planning Committee and holds a B.A.Sc. in Actuarial Science (magna cum laude) from Ball State University.

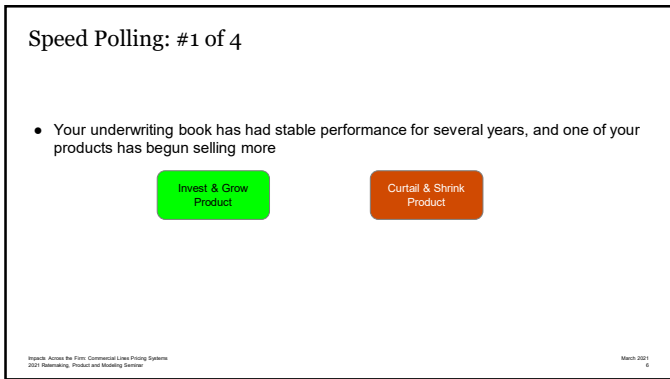
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Speed Polling: #2 of 4

- Your underwriting book has had stable performance for several years, and one of your products has begun selling more
- Your quote to bind ratio for the product increased from 25% to 35%, and your boss congratulates you as a top seller for the quarter

Invest & Grow Product

Curtail & Shrink Product

Market Access By Firm: Commercial Lines Pricing System
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Speed Polling: #3 of 4

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- A major competitor exits the line, your submissions increase 15% from prior year, and your agents thank you for providing market stability

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Speed Polling: #4 of 4

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- Your actuary completes a study of 9 month old claim data and finds paid loss ratio is up 20% on this product

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Speed Polling Results

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The polling questions simulated an actual case study (disguised data)

- We recently observed two insurers making different strategic moves in the same commercial lines segment. One insurer was exiting the segment while another was growing.
- The exiting insurer had the management information, underlying data, and operating governance to recognize and react to the emerging trends; the growing insurer did not.
- In this case, insureds within the segment were offering a new service with a different and much higher loss potential.

	Carrier entering	Carrier exiting
Rationale for Entry/Exit	<ul style="list-style-type: none"> Significantly higher productivity metrics than expected Decided to "double down" 	<ul style="list-style-type: none"> Significantly higher productivity metrics <i>along with</i> higher claims activity and could not readily identify the drivers. Decided to pause writings while evaluating the market (eventually deciding to exit)
Underlying Data Structure	<ul style="list-style-type: none"> <i>Loosely integrated</i>, which led to quarters of adverse experience before the underwriting issue was addressed Led to significant losses 	<ul style="list-style-type: none"> <i>Tightly integrated</i>, which enabled timely and accurate product management Cross-functional communication that informed the moratorium and exit decisions

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Commercial Auto provided a broader lesson

Between 2007 and 2016, the industry loss ratio rose from 66% to 76%. How did everyone miss it?

Data not considered by industry models:

- Increase in miles driven
- New vehicle impacts, which
 - Increased distracted driving
 - Were more expensive to repair
- Snapchat while driving

Actuarial reserving and pricing models:

- Operate 1-4 times per year, leading to time lags between market shifts, detection, and response
- Aggregate models are designed to assess changes, but not explain or avert them

Limited (or poor) information flowing to **operations** leads to:

- Slow Underwriting response
- Reactive Claims activity
- Underwriting, Financial, and Risk Management appetites responding at different rates to changing conditions
- Imprecise communication

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3 The Downstream Impacts of Large Account Pricing and Pricing System Design

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The downstream impacts of large account pricing and pricing system design

We will walk through three examples which show the importance of having integrated tools to not only improve underwriting & pricing decisions but to also improve the functions of other pillars of the organization

- **Example 1:** Will focus on informing reserving.
- **Example 2:** Will focus on improving pricing analytics.
- **Example 3:** Will focus on informing capital modeling and business strategy.
- **Example 4:** Will focus on informing CAT modeling and management.

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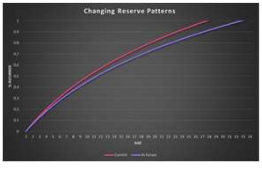
Example 1: Informing Reserving


We will demonstrate how the detailed work coming from individual account pricing analyses can be utilized by reserving teams to better inform their view of future reserve volatility. Conversely, we will demonstrate how this view of reserve volatility should inform pricing and underwriting decisions.

When pricing individual accounts, loss cost expectations are often picked at a much more granular level than reserving is performed at

If a portfolio has shifts in the proportion of expected loss cost by-peril, segment or CAT/non-CAT, this can have drastic impacts to reserve patterns and lead to reserving inaccuracies

Category	Peril	Loss Cost	Reserve	Reserve
Property & Casualty	Auto	100%	100%	100%
	Home	100%	100%	100%
	Other	100%	100%	100%
Commercial	Auto	100%	100%	100%
	Home	100%	100%	100%
	Other	100%	100%	100%
Total Reserving	Auto	100%	100%	100%
	Home	100%	100%	100%
	Other	100%	100%	100%



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Example 1: Informing Reserving

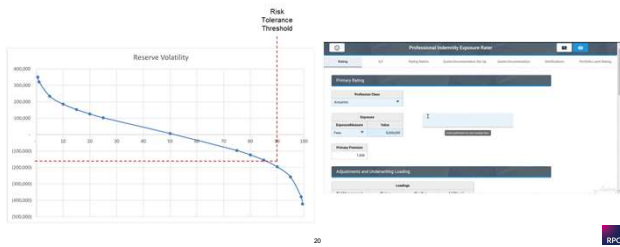
By setting up an integrated ecosystem of tools which allows reserving to tap into detailed pricing / underwriting data, the reserving team can react to shifts much faster, leading to more accurate reserves and a better understanding of reserve volatility.



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Example 1: Informing Reserving

This new view of reserve volatility should in turn impact pricing / underwriting strategy to ensure the firm is writing within their risk appetite and appropriately reflecting this risk when pricing deals.



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Example 1: Conclusion

Capturing transactional pricing data and information can help

- improve the predictive accuracy of the actuarial reserve analyses and
- improve understanding of reserve volatility

This improved understanding of reserve volatility can be used by the risk function to test alignment with the insurer's risk appetite / tolerance, which in turn can inform

- Underwriting (new and renewal business) planning and strategy and
- Risk loadings and target returns used in pricing

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Example 2: Better Pricing Analytics

An integrated pricing system can capture data from

- All submissions - including accounts declined or not taken up
- Aggregate experience data from all accounts, including nonrenewed

To Improve Experience Rating, Exposure Rating, and Final Indicated Price

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Example 2: Better Pricing Analytics

How can this data be used to produce better tools?

Loss development studies for key segments

Already alluded to in Example 1 above, can produce relevant benchmark LDFs

Collections of benchmark LDFs preloaded into experience pricing model for actuarial selection

Trend analyses

Use actual experience to arrive at trend assumptions for various segments and coverages

Possible trend factors, based on these analyses, preloaded into experience model for actuarial selection

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Example 2: Better Pricing Analytics

How can this data be used to produce better tools?

Exposure curves

Collection of curves relevant to key segments informed by the enhanced development studies

Implicitly produces a wider collection of ILFs

Exposure curves / ILFs preloaded into pricing system for actuarial selection

Credibility of exposure and experience rating

Use actual experience of segments / accounts to estimate needed parameters

Indicated credibility weights calculated automatically by pricing system, actuary selects actual weights to be applied when arriving at indicated technical price
Could be used for primary and first excess cat layers

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Example 2: Conclusion

Capturing transactional pricing data and information can help insurers develop better benchmarks and algorithms for experience and exposure rating

- Trend and Development benchmarks for use in developing exposure curves and inputs to experience pricing models – which in turn can be shared with the reserving and risk functions to inform selections made for their models
- Development of more granular and relevant exposure curves (and associated ILFs)
- Automation of credibility procedures and production of indicated credibility weights

Insights gained from the improved pricing process can also inform underwriting strategy and planning and assist in the production of risk metrics for the risk function's management reporting.

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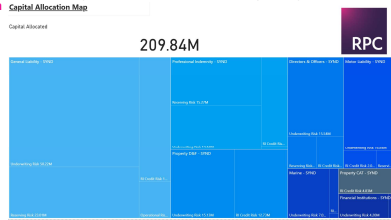


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Example 3: Informing Capital Modeling & Business Strategy

We will demonstrate how transactional pricing data can be utilized by the capital modeling team to improve their models and in turn allow the firm to make better business decisions. We will touch on the downstream impacts to reinsurance purchasing decisions and developing optimal underwriting and growth strategies. Similarly to Example 1, we will demonstrate how this more accurate view of capital utilization should inform pricing and underwriting decisions.

Expanding upon our first two examples, the detailed risk modeling that often goes into individual account pricing can provide capital modelers with information that allows them to better model underwriting risk. Further, our more accurate reserves and understanding of reserve volatility also leads to improved capital modeling accuracy.



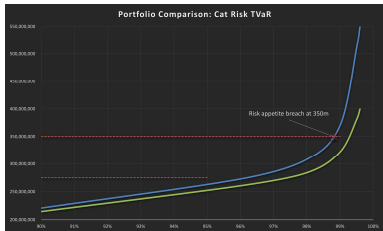
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Example 3: Informing Capital Modeling & Business Strategy

Capital models are a critical tool for companies in determining their reinsurance purchase strategy. More accurate capital models means a more optimal outwards reinsurance portfolio.

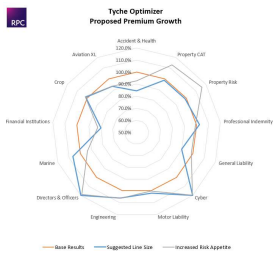


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Example 3: Informing Capital Modeling & Business Strategy



This more accurate capital model should in turn influence underwriting and growth strategy. Further, we now have a better understanding of the capital required to support different business segments, which should be appropriately reflected when pricing risks to ensure an appropriate return on capital.

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Example 3: Conclusion

- Capturing transactional pricing data and information can help
- improve capital model granularity and accuracy and in turn
 - improve reinsurance purchasing decisions and
 - improve underwriting strategy

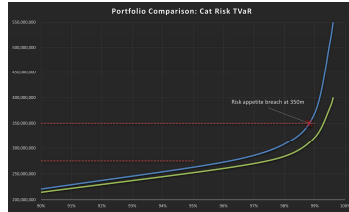
The improved understanding of the allocated capital required to support different segments or even individual policies gained from a more accurate capital model can in turn inform more appropriate risk loadings and target returns used in pricing

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Example 4: Informing CAT modeling & management

We will demonstrate how individual deal pricing / underwriting information including CAT model results can be utilized to monitor in real-time as a portfolios grow and changes where a company stands relative to their risk appetite. Following suit with the other examples we will demonstrate how this monitoring should inform pricing and underwriting decisions.

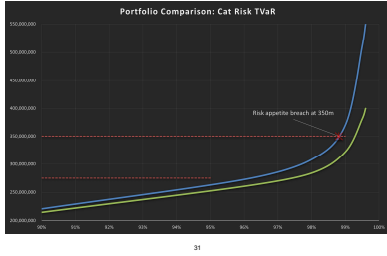
As a CAT-prone portfolio grows and changes over time, a company's CAT exposure should continually be monitored to ensure they are staying within their desired risk appetite. It is critical to have tools which allow for information on newly written policies or policies being considered by underwriting to easily be accessed for catastrophic accumulation monitoring.



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Example 4: Informing CAT modeling & management

Continued monitoring of CAT exposure may require actions to be taken such as reinsurance purchasing or changing underwriting strategy to avoid over-exposure.



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Example 4: Conclusion

Capturing transactional pricing data and information can help

- improve the accuracy and timeliness of CAT modeling and in turn
- improve visibility into a firm's CAT exposure

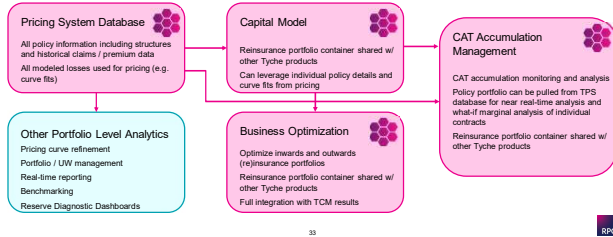
This improved understanding of CAT exposure can be used by the risk function to test alignment with the insurer's risk appetite / tolerance, which in turn can inform

- Facultative and treaty reinsurance purchasing and
- Underwriting (new and renewal business) planning and strategy and
- Risk loadings and target returns used in pricing (marginal CAT pricing)

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An Example of a Fully Integrated Modeling Ecosystem

At the core of a fully integrated modeling ecosystem which fully leverages pricing / underwriting modeling and decisions is a large account pricing system with rich automated data capture that can inform other pillars of the organization



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Thank you! Questions?

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