IF I COULD HAVE PREDICTED MY MODELING...

OR

QUESTIONS FROM A PREDICTIVE MODELER IN SMALL BUSINESS INSURANCE

A presentation for the Southern California Actuarial Club

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AGENDA

- Why do it?
- Why don't people know what they want? And why do they lie about it?
- Okay, so we're gonna build the things – who's gonna do it?
- Pulling data – how hard could that be?
- Modeling itself
- We've built great models. That's enough, right?
- Cool. Models built and implemented. Can we relax now?

WHY DO IT?

WHY DON'T PEOPLE KNOW WHAT THEY WANT? AND WHY DO THEY LIE ABOUT IT?

- Management *always* says that they want to be a leader in analytics and modeling. Management *rarely* realizes the level of commitment (people, I.T., culture) required.
- Management assumes modeling is Broccoli – something on the plate you are supposed to eat, but they are not sure why they're good for you.
  - Models built to target a technical price may be the opposite of yield models. "Going after the good business" may be the same thing as saying "Going after the business everyone else wants"
  - Yield models may not be retention models

WHY DON'T PEOPLE KNOW WHAT THEY WANT? AND WHY DO THEY LIE ABOUT IT? (PT 2)

- Other factors, beyond investment level, may dictate where you need to be:
  - Data – Is your company large or small? Heterogenous business, or highly diversified in terms of customer base, coverages, sizes, etc.? Do you have a large store of readily accessible existing data, or are you
  - People – Do you have anyone on your team that knows modeling?
  - Market Position – Are you going head to head with sophisticated modelers in a well entrenched niche (Retail, Office, Service) or are you going after risks no one else wants because of your specialized expertise (Livery, Garbage Trucks)
  - Competition – Are you already in an adverse selection death spiral?

OKAY, SO WE'RE GONNA BUILD THE THINGS – WHO'S GONNA DO IT?

There are four basic sources of resources for a modeling effort:

- **Actuaries:**
  - Are Frequently assigned regardless of background in or commitment to predictive modeling (Ralph's good at math, right?).
  - Can great modelers, but not all are; some just need time to climb the learning curve and others lack the interest or drive.
- **Consultants:**
  - Know modeling but not the company, it's customers, or it's data.
  - Will push their version of modeling, their favored I.T. implementation, project management, etc. Modeling is sometimes used a wedge to get in the door.
  - Work for other companies. If you have a great idea that may result in a competitive advantage, it may not take them long to sell it.
  - Are paid by the hour, and hence require management.
- **Outside Hires:**
  - Need time to be brought up to speed
  - May not fit with the culture
- **Vendors:**
  - Provide pre-built models or model components based on others data. Pre-built models will never provide sustainable competitive advantage, but can be used to cover a weakness; model components can be a great way to add punch to internal models
  - Can be a fast and cheap way to get models up and running, especially for smaller companies

PULLING DATA – HOW HARD COULD THAT BE?

Pulling data is almost always the hardest part of any modeling effort.

- Questions to ask:
  - How many data systems will you have to access? Where are we getting earned premium or exposures from? Loss data? Do we have different data for different parts of our book of business based on line of business, customer segment, or historical divisions (e.g., mergers)?
  - How reliable is the data? Are there historical oddities in it, due to a change in claims or underwriting practices?
  - What transformations are required? How will you treat cats? How will you cap large losses? How mature does the data need to be?
  - Where will you get the independent variables? What internal data will you use, and what external? What can you match up to your historical data?

MODELING ITSELF

This is the fun part. Enjoy.

WE'VE BUILT GREAT MODELS. THAT'S ENOUGH, RIGHT?

Modeling efforts need to have implementation in mind right from the start

- Something has to translate a model score into an actual pricing action
  - Variable in the manual rate calculation
  - Discretionary pricing can be dictated by model, and implemented by an Underwriter or by algorithm
- Models can be used to build or improve factors in the manual rate calculation, or in discretionary pricing.
  - Dependent variable for manual rate calculation can be pure premium or loss ratio; discretionary pricing should be done based on some flavor of loss ratio

Successful Implementation requires

COOL. MODELS BUILT AND IMPLEMENTED. CAN WE RELAX NOW?

New data is coming on line all the time
- ISO has modeling data and modeling components
- Lexis/Nexis is introducing personal credit and public record data and models

Models degrade over time
- Your book may shifts, especially after introducing models, other rate, product, or appetite changes
- The market shifts – variables that were once reliable differentiators may become common
- Agents may learn to game your models
- I.T. development may break the models or variables

Your best people may leave
- Loss of modeling or I.T. resources may make models harder to maintain
- Need to constantly train your team