

# Predictive Model Development & Implementation –

A Commercial Insurance Business Perspective

## CAS Predictive Modeling Seminar

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## Predictive Model Development & Implementation – A Commercial Insurance Business Perspective

### Traditional Focus of Predictive Modeling Initiative

- Buy/build modeling talent, hardware/software, data marts, etc.
- Explore new statistical techniques to generate segmentation
- Analyze, analyze, analyze

### Benefit Drivers

- Timely deployment into the field
- End user buy in
- Business actions driven by model results
- Building a model the business can use (and values)



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### Session Objectives

#### Key Issues Addressed Today

- How are predictive models used in the small commercial industry and how do you develop the best model for your organization?
- What should the organization consider when balancing model sophistication vs. effective implementation?
- What are the actuarial and business roles & responsibilities in model deployment?
- How do models effect day to day actuarial and business operations?
- How can these projects get completed effectively and efficiently?



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## The Business Users

### Project Goals

- Improved Loss Ratio
- Efficiency Gains
- Marketing (book rolls, warm leads, programs..)
- Premium Audit
- Fraud

### Questions to ask Business users in the beginning

- What do you want the model to predict?
- How are you going to use it? How will it be implemented?
- How long do you have to get the model built?
- How will the actuarial/statistical and business teams manage the project communications?
- How much IT involvement?
- Quick “yes” v. Slow “yes”
- Are we building something that is Legal/Compliant?
- Budget



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## The Business Users (cont.)

### People Considerations

#### Executive Sponsorship

Support at the highest level on the organization. Managing buy on and support is critical to the success of the project.

#### End User Education

Train end users to understand modeling, striking a balance between the detail that you as an actuary bring to the table with what they need to know in their job (how it works and how they explain it to their customers). Also, recognizing this is change, and change is difficult.

#### Agent Communication

Inform agents on use of models in risk selection & risk pricing.

#### Performance Management

Conduct ongoing reviews in order to continuously improve product management and underwriting decision-making.



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## Business Benefits

In addition to supporting improved decision making, implementation of Predictive Modeling can result in tangible benefits that may improve overall company profitability.

| Metric / Result                          | Description  | Timing <sup>1</sup> |
|--|--|---------------------|
| <b>New Premium Growth</b>                | <ul style="list-style-type: none"> <li>• Increase in policy in force count through focused risk selection</li> <li>• Increase agent share of book through focused risk selection and/or pre-screened risk selection</li> <li>• Improve clarity and consistency of risk appetite</li> <li>• Increase refinement and segmentation over time</li> </ul> | Near to Mid Term    |
| <b>Reduced Loss Ratio</b>                | <ul style="list-style-type: none"> <li>• Improve accuracy of risk pricing for new and renewal business across all segments / deciles</li> <li>• Non- renewal of least desirable risks</li> </ul>   | Near to Mid Term    |
| <b>Improved Retention</b>                | <ul style="list-style-type: none"> <li>• Increase in retention rate of most profitable risks through potential discounts or increased customer service</li> <li>• Enhance agent productivity and satisfaction – ease of business</li> </ul>  | Near to Mid Term    |
| <b>Increased Underwriting Efficiency</b> | <ul style="list-style-type: none"> <li>• Increase underwriter focus on higher value-add activities (less transactional, exception based, portfolio manager)</li> <li>• Increase proportion of “low touch” renewal and new business</li> </ul>  | Mid to Long Term    |
| <b>Decreased Expense Ratio</b>           | <ul style="list-style-type: none"> <li>• Decrease claim loss adjudication and handling expense</li> </ul>  | Mid to Long Term    |



<sup>1</sup>Near term is defined as less than one year. Mid term is defined as one to two years. Long term is defined as three years or more.

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## The Business Actuary's Perspective





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## The Business Actuary's Perspective

### Agenda:

- Relationship to the Business
- Implementation and Buy-on
- Communication of Results





## **Relationship to the Business**

- Not a support function
- Part of a larger decision-making processes
- Understanding that business implications are just as important as a strong model
  - Sometimes the strongest model isn't the best solution
- How does a model fit into both Underwriting and Sales functions?
- Knowledge of business processes and end-user experience
  - How is model integrated with rating systems and business applications?
  - Who is the end-user (e.g. Agent vs. Underwriter), and what is their motivation?



## **Implementation and Buy-On**

- Can't start from just Actuarial
- Business and Underwriting Leadership need to be at the table as soon as project starts
- Collaborative business project vs. pure statistical exercise
- Implementation just as important as building model
- What are the practical considerations vs. What's the strongest model
  - May need to sacrifice model lift for better business model
  - Strong variables vs. ability to acquire data elements
  - Strong variables vs. ability to game the system



## Communication of Results

- Know your audience
- Need to establish belief in the model
  - Communicating all of the details isn't always the best approach
  - Proof that the model works vs. how the model works
  - Not always about how superior the model is, but how it's a tool that allows all of us to do our jobs better
- Who needs to know what – Underwriter vs. Agent vs. Sales Rep
- Key Metrics
  - Model Lift
  - Frequency and Loss Ratio Performance
  - Distribution of Scores – e.g. non-renewal percentages
- It's not enough just to be right

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## Effective Project Execution – Focus on Fundamentals

## Key Project Levers – Lessons Learned

|  | Model Value Capture Lessons  | Project Implications  |
|--|--|---|
| <b>“They must control the tempo”</b>           | <ul style="list-style-type: none"><li>• Actuarial inclination toward precision has limits</li></ul>  | <ul style="list-style-type: none"><li>• Project participants should maintain practical balance and consider business users</li></ul>                      |
| <b>“This is always a tough place to play”</b>  | <ul style="list-style-type: none"><li>• Information technology (IT) resources and data knowledge will be thin</li><li>• IT can make life easier, or not</li></ul>                  | <ul style="list-style-type: none"><li>• Involve IT expertise early and often</li><li>• Listen to their perspective – push back when appropriate</li></ul> |
| <b>“Our coach put us in a position to win”</b> | <ul style="list-style-type: none"><li>• A cross-functional project needs a guiding force</li><li>• Lack of visible/vocal support may not have implications until the end</li></ul> | <ul style="list-style-type: none"><li>• Lone rangers face challenges</li><li>• Actuaries have opportunity to broaden internal reputation</li></ul>        |

## Key Project Levers – Lessons Learned

|  | Model Value Capture Lessons  | Project Implications   |
|--|--|--|
| <b>“We have a great deal of respect for our opponent”</b>                              | <ul style="list-style-type: none"><li>Balanced focus on individual variables vs. aggregate power</li></ul>   | <ul style="list-style-type: none"><li>Anticipate internal opposition and communicate appropriately</li><li>Ready organization to apply rather than deconstruct</li></ul>               |
| <b>“The game was a lot closer than (wasn’t as close as) the final score indicates”</b> | <ul style="list-style-type: none"><li>Avoid excess fine tuning – lift can exceed the company’s capacity for business action</li></ul>  | <ul style="list-style-type: none"><li>Validate and implement as soon as possible to enable value capture</li><li>Data source research is the future competitive lever</li></ul>        |
| <b>“It was a team effort”</b>  | <ul style="list-style-type: none"><li>Modeling can be an actuarial exercise rather than an enterprise priority</li><li>Consider sweeping nature of the changes required to realize full benefits</li></ul> | <ul style="list-style-type: none"><li>Prepare the organization for the use of model as a tool</li><li>Implementation can vary across business units, platforms and functions</li></ul> |



## **Project Summary – The Ideal**

- Practical, that can be implemented, understood and updated within reasonable time frames
- Budget and goals agreed upon at commencement
- Easy to understand the result internally (score drivers, logic)
- Can be communicated to external customers (Agents)
- Not simply an actuarial project

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