The Revolution of Predictive Modeling in Insurance

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The Revolution of Predictive Modeling

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The Revolution of Predictive Modeling in Insurance

WHEREVER THERE IS DATA….

….THERE IS OPPORTUNITY

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But we always must ask…

….What is the problem we are trying to solve?

**Underwriting Problems to Solve**

- Which reports do I need to order for each customer in quoting new business?
  - Which renewal customers should I order a MVR?
  - Are there certain customers I should waive verification on (good student, for example)?
- Which homes should I inspect and how often? What order should I inspect them in?
- Is there a different way to underwrite new and renewal business other than the traditional rules-based approach (no more cars than drivers, clean record for 3 years, etc.)?
- Who do I select for a workers compensation premium audit?
- In Commercial lines, can I identify and define the realm of low touch underwriting better so that I can quickly determine what is an acceptable risk and what needs thorough underwriting?

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Marketing Problems to Solve

- What is the optimal mix of market media to achieve a goal of growing 10% next year?
  - How much will we grow if we increase our marketing spend in prime time commercials by 50%?
- What does social media activity tell us about a customer's tendency to shop, stay, or refer a friend?
- Which customer is most likely to cancel mid-policy?
- What Brand attributes are most attributable to new sales?
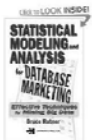
- Predicting customer behavior is the opportunity
- Neuroeconomics is an interdisciplinary field that seeks to explain human decision making, the ability to process multiple alternatives and to choose an optimal course of action
- Lagged effect on behavior (recursive modeling)

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Claims Problems to Solve

Transactional claims data opens up a world of business

- *Occurrence details, initial claims report, adjustment, and settlement*
- *Other info of import like attorney involvement, service providers, adjusters*

- Cycle Time
  - If I get the damaged car to a body shop quicker than average, what impact does this have on severities?
  - How do I prioritize my work if I have 40 open claims? Does this vary by coverage or customer segment?
- Claim Diaries
  - Severities are up, but I can't explain why. Is there something that can be mined in the unstructured data that might provide insight (Chinese drywall)?
- Claim Customer Satisfaction Surveys
  - Given the latest quarter of claim data, can you determine baseline customer satisfaction?

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Claims – Fraud Problems to Solve

- Can one predict fraud during the underwriting process?
- Once a claim has been made, how do I determine which claims I should send to SIU (fraud probability and cost)?
- Is it possible to predict fraud at time of new business?

- Average insurance fraud, criminal offenders, organized crime gangs require different techniques
  - Network analysis versus single claim analysts
- Models need much more frequent updating
- Algorithm types
  - Rules (suitable for known patterns)
  - Anomaly detection (unknown patterns)
  - Advanced analytics (complex patterns)
  - Social network analysis (associative link patterns)

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Agent Problems to Solve

- Where is the ideal place to start a new agency based on demographic trends, competitor placement, etc.,?
- What predicts whether a new agent will be successful and/or stay with the company for at least 5 years?
- How do I optimize agent commissions to maximize customer lifetime value?

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Operational Efficiencies Problems to Solve

- Human Resources
  - Can I predict how long an employee with stay upon hiring?
    — Probability of lapse
  - What is the probability that an employee will quit if they get a $0 raise?
    — Raise elasticity model
  - What is the optimal bonus structure for the employee base to maximize retention and productivity?

- Expense Management
  - What is the difference in take rates if I improve upon commercial quote time by a day? By a week?
  - Costs of ordering reports for new business and renewals is expensive, how can we reduce costs in this area?
  - Does it ever make sense to overspend on claims or customer service to improve customer experience?

Other Thoughts

- Reserving
  - Given underwriting and claim information, can a model best predict the appropriate reserve amount to be booked?
- Litigation / Class Action Settlements
  - Which cases are most likely to become class certified? What is the expected cost of the settlement?
- Organizational design
  - What is the best makeup of a team of individuals to achieve success on a high profile project? What factors contribute to a high performance environment?
- Corporate Security
  - Can I detect, based off of internet use at the office, who may be defrauding the company?