Data mining techniques can be useful for:

- Establishing rating plans
- Adjusting claims
- Marketing
- Fraud prevention
- Other

Focus today is price optimization in personal lines insurance

Price optimization incorporates the results of data mining to establish rating plans
Concerns

- Data – What data is acceptable to use in establishing personal lines insurance premiums?
- Unfair Discrimination – Is there a point at which a deviation from cost-based rates results in unfairly discriminatory rates?
- Complexity – Is there a point at which a rating plan is too complex/granular?
- Transparency – What does the regulator need/want to see?
Data

- Insurance-related consumer data
  - Loss/claims experience
  - Competitor experience
  - Percentage of existing insureds renewing given a premium change (retention analysis based on insurer’s own data)
  - Percentage of potential new insureds purchasing given premium levels (conversion analysis based on insurer’s own data or insurance quoting/shopping database)
Data

- Non-insurance consumer data
  - Credit-related data
    - Used to develop cost-based rating plans
    - Regulated as to what data can be used and how it is used

- Is there other data whose use could or should be regulated?
  - Either insurance related, e.g., claims inquiries or
  - Non-insurance related, e.g., magazine subscriptions

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Unfair Discrimination

- Most states require that “rates shall not be excessive, inadequate or unfairly discriminatory”

- What is unfairly discriminatory?
  - Using rating characteristics that are not allowed, e.g., race, religion
  - Using rating characteristics that are not filed/approved
  - Charging two risks with the same risk profile at two different prices
  - Using rating characteristics that are not cost-based
  - Selecting rating factors that deviate too far from the cost-based indication
Complexity/Granularity

- Personal lines rating plans have become increasingly complex
  - More sophisticated modeling techniques, e.g., generalized linear modeling
  - More refined rating classifications

- Complexity/granularity is independent of price optimization

- Is there a point at which a rating plan is too granular?
Transparency

- All rating characteristics that are used are filed
  - How do the indicated rating factors and selected rating factors compare?
  - Models employed can be reviewed, e.g., credit-scoring models

- Distributions of rate changes
  - Did the business considerations achieve the goal of limiting changes?

- Comparison to loss experience
  - Are the final rates reasonably consistent with cost-based indications?

- What other information would be helpful?
  - Rate Filing Opinion/Attestation?
Glossary of Terms

- Rating characteristic – a measurable or observable characteristic, e.g., age, gender, marital status
- Rating factor – the numeric value assigned to a rating characteristic
- Rating plan – the schedule of rating characteristics and corresponding rating factors along with the manner/order in which they are applied to determine the final premium
- Risk profile – the combination of rating characteristics of a particular risk
Insurance Data Mining: Sound Business Practice or Unfair Discrimination?

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