BAS 2019 Bruins Mutual Case Competition

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AGENDA

Part 1
Introduction

Part 2
Analyzing a New Rating System

Part 3
Tackling Key Business Issues

Part 4
Conclusion
Introduction
GOALS

- Recommend Rating System
- Improve Retention
- Attract Younger Customers
Analyzing a New Rating System
NEW RATERS

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1</td>
<td>$150</td>
</tr>
<tr>
<td>V2</td>
<td>$260</td>
</tr>
<tr>
<td>V3</td>
<td>$370</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Driver</th>
<th>Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mom</td>
<td>0.90</td>
</tr>
<tr>
<td>Dad</td>
<td>0.95</td>
</tr>
<tr>
<td>Teenager</td>
<td>2.10</td>
</tr>
</tbody>
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Driver Averaging

Average driver rate: \( (0.90 + 0.95 + 2.10)/3 = 1.32 \)

\( ($150 + $260 + $370) \times 1.32 = $1030 \)

Driver Assignment

\( $150 \times 0.90 = $135 \)

\( $260 \times 0.95 = $247 \)

\( $370 \times 2.10 = $777 \)

\( \{ \text{Total} = $1159 \} \)
## WINNERS & LOSERS

<table>
<thead>
<tr>
<th>Profile</th>
<th><strong>Driving Averaging</strong></th>
<th><strong>Driver Assignment</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$3.1k</td>
<td>$2.9k</td>
</tr>
<tr>
<td>2</td>
<td>$3.9k</td>
<td>$3.6k</td>
</tr>
<tr>
<td>3</td>
<td>$1.1k</td>
<td>$1.1k</td>
</tr>
</tbody>
</table>

- **No COMP/COLL for riskiest driver**
- **Riskiest driver ≠ primary driver**
- **Only 1 vehicle & driver**
CONSIDERATIONS FOR RATER SYSTEM

Policyholder mix

Manipulation from agents/customers

Price fluctuations from switch
Generalized Linear Model

Data

VARIABLES

Method

GLM

Response

COLLISON COVERAGE
CONSIDERATIONS FOR GLMs

Countrywide
- More data
- Protection from sudden fluctuations
- Simpler

Statewide
- State laws
- Point system
- Driving conditions
- Market share
GLM OUTPUT ISSUES

- Good student
  - Needs to be recategorized

- Driver points
  - Indicated factor (1 point > 2 points)

- Driver experience
  - Minimal difference
Indicated factor by driver points

- Indicated Factor
  - 1.00
  - 1.00
  - 1.42
  - 1.16
  - 1.79

- Driver Points
  - 0
  - 1
  - 2
  - 3
Indicated factor by Driving Experience

- Driving Experience (in years):
  - 0: 1.24
  - 1: 1.01
  - 2: 1.02
  - 3+: 1.00
ADJUSTMENTS

Driving experience → Combine categories

Model year → Combine categories
ADDITIONAL VARIABLES TO CONSIDER

- Low standard error
  - Vehicle use
  - Multipolicy
Tackling Key Business Issues
Persistency with company

Accident forgiveness

Full pay discount
YOUNG CUSTOMERS

- Good Student
- Mobile app
- Referral program
Conclusion
 SHORTCOMINGS

- More variables
- Not given policy holder data to make concrete business decisions
THANK YOU