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IMPACT OF THE DEREGULATION OF MASSACHUSETTS PERSONAL AUTO INSURANCE

November 17, 2009

- The Players in MA
- Competitive market
 - MA Auto Market pre-4/1/2008
- History of Fixed & Established
- Uncertain Road to Competition
 - What's different this time?
 - What happened next?
- Company Response to Managed Competition
 - All Hands on Deck
 - Overview
 - Indications
 - Modeling
 - Capping
- Early Indicators of Success

The Players in MA

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- Commissioner of Insurance/SRB/DOI
 - Rates cannot be fixed and established unless competition is :
 - Insufficient to assure rates will not be excessive
 - Conducted in a manner to destructive of competition or a threat to insurer solvency
 - Must promulgate fixed and established rates otherwise
 - Set fixed and established rates historically

- Attorney General
 - Chief lawyer and law enforcement officer of the Commonwealth
 - Represent interests of consumers in insurance rate-setting proceedings before the Commissioner of Insurance

- AIB
 - Preparation of industry rate filing & hearing support
 - Preparation of fixed & established rate manual
 - Estimation of subsidies in fixed & established rates
 - Other (analysis industry data, support anti-fraud initiatives)
 - Detail Claim database, identification of high-fraud towns
 - Publish mandated vehicle symbols, territory definitions

The Players in MA cont'd

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- ERP
 - Established by state to ensure availability of product in all areas (e.g., urban areas)
 - Wrote as much as 32% of business in the State

- CAR/MAIP – the residual market
 - CAR – reinsurance facility; ceded business is pooled and results distributed to each company based on adjusted market share;
 - Distorted economic incentives to fight fraud
 - Deficits have been above \$500MM
 - Market share has been as high as 2/3 of MA Auto market
 - MAIP – Assigned Risk Plan
 - ERP assignment & redistribution

- 19 Insurers
 - All but three companies supported reform of the residual market & move to competition

- IFB Insurance Fraud Bureau
 - Fight insurance fraud, implemented & manages CIFI Program

Competitive Market – What is it?

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- According to NAIC Model Law, relevant tests of workable competition include:
 - Number and size of voluntary market players
 - Availability of coverage and information
 - Nature and size of residual market
 - No barriers to entry/exit
 - Product innovation/discounts
- How does Massachusetts Auto “measure” up?

Massachusetts Auto Market Pre 4/1/2008

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- Number and size of voluntary market players
 - In 1977, there were over 100 insurers writing PPA in Massachusetts
 - In 2007, this number dropped to 19 insurers
- Not as competitive as other states, but economists agree → not a monopoly/oligopoly; significant opportunity to enhance
- Availability of coverage and information to consumers
 - Few agency appointments in subsidized territories → ERPs
 - Many receiving voluntary contracts
 - Internet age makes dissemination of information to consumers easier
 - Fraud and subsidies in urban areas continue to decline
- Once a big problem, much less now



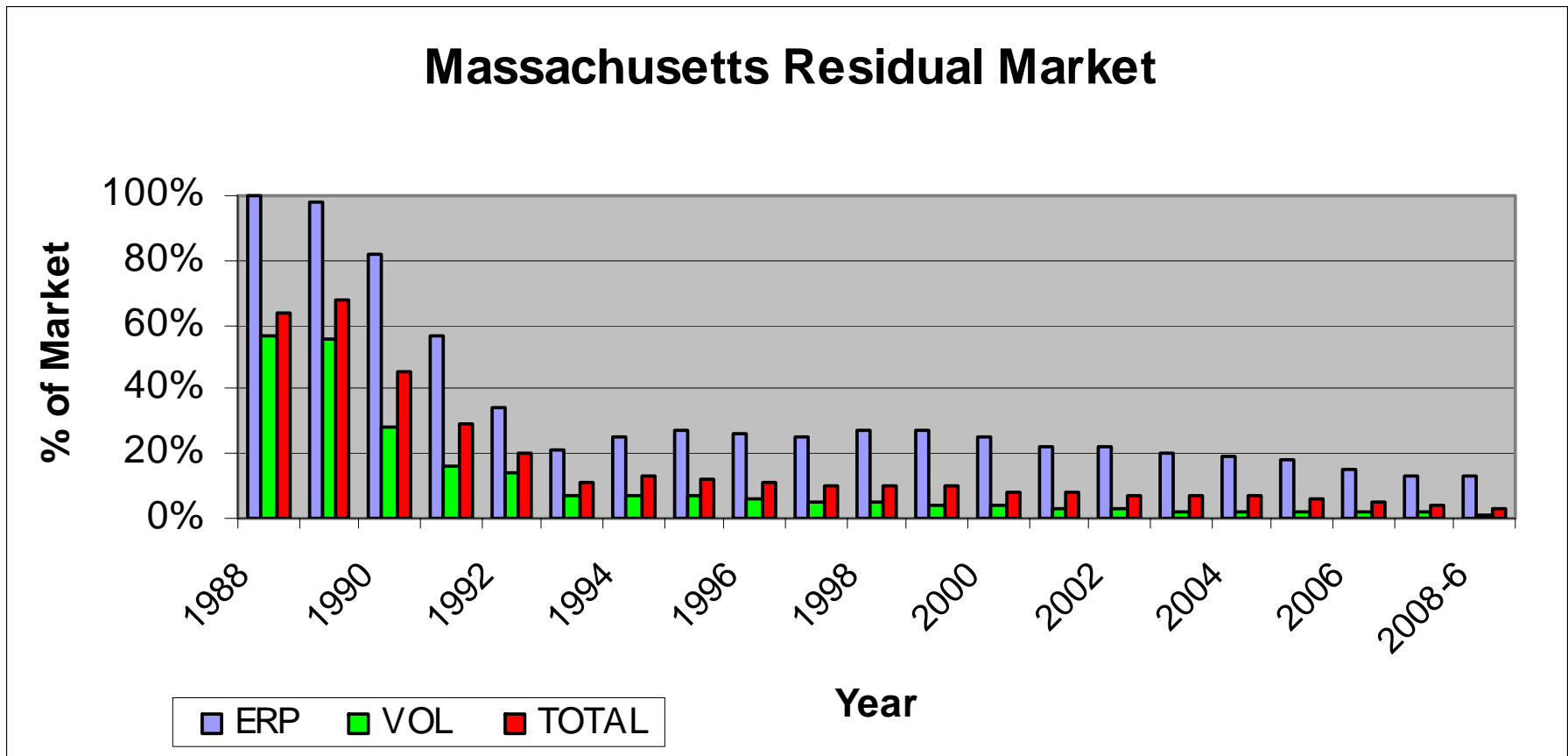
Massachusetts Auto Market Pre 4/1/2008

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- Product Innovation
 - Very limited offering of product enhancements compared vs. other States
 - CAR Rules created barriers to offering
 - Regulatory environment discouraged innovation
 - OEM Parts endorsement, group discounts and deviations suggest competitive behavior.
- Nature and size of residual market
 - Commonwealth Auto Reinsurers (CAR)
 - Once had 2/3 market share
 - At the end of 2007, share was ~4%
 - Industry deficit at historic lows
 - Once a major sign of an uncompetitive market, largely corrected in recent years

How BIG is the Residual Market?

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Massachusetts Auto Market Pre 4/1/2008

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- Barriers to entry/exit
 - Companies wishing to leave voluntary market must pay their share of the estimated deficit for each of the next three years
 - Some nationals paid over \$200MM each for the right to exit
 - No new carriers attracted to the State
 - Rates were fixed and established
 - Large political influence
 - Intentional rate subsidies
 - A handful of carriers amassed large market shares
 - Underwriting and rating factors used in other States not allowed

- Significant barriers to entry and exit have existed, but less of an issue today

History of Fixed & Established

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- 1930 – 1976 : Fixed & established on liability, intentional subsidies for urban and youthful drivers
- 1975: Fixed & established rate setting extended to all coverages
- 1976: Rates cannot be fixed and established unless competition is :
 - Insufficient to assure rates will not be excessive
 - Conducted in a manner to destructive of competition or a threat to insurer solvency
- 1977: Sufficient competition → File-and-use
 - January 1 common renewal date
 - 121 companies filed rates; average increase 14.5%
 - Much larger rate increases in Urban areas
- August 1977: Insufficient competition → Fixed & Established
 - Lack of pricing info & not writing business at quoted prices

History of Fixed & Established

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- 1991: Insurance Fraud Bureau established
- 1996: Competitive discounts allowed, make up premium shortfall if cede
- 2001: Last of the nationals (CU) exits state
- May 2003: Grandmother dies in staged accident; CIFI Task Force established
- 2005: CAR Rules revised - deficit sharing formula, credits, ERP redistribution
- 2006: On the eve of introduction, Commerce litigated re: Commissioner's authority & stalls to move to MAIP
- 2006: Supreme court overturns lower court ruling → MAIP to replace CAR; Shift to 4/1/2007 rate effective date
- July 16 2007: **SURPRISE !!!!**

Uncertain Road to Competition

What was different this time?

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- Competitive environment
 - Small residual market
 - Preceded by a series of rate decreases
 - More lead time (4/1 vs. 1/1)
 - Less than 10% of business has 1/1 effective date
 - Technology
 - Insurers ability to respond
 - Commissioners ability to share with public
 - Fewer companies
 - Aid DOI in review process
- Clear guidance from Commissioner



Uncertain Road to Competition What happened next?

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- July 16 2007: Managed competition announced
- August 28 2007: Draft Regs released
- October 5 2007: Final Regs released
- October 19 2007: Filing standards released
- November 19 2007: Draft rate filing due date
- November 20 2007: DOI publishes competitor filings
- November 27 2007: Rates, rules & manual due date



Uncertain Road to Competition Clarification Bulletins

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- October 5 2007: Final Regs released
 - Certain rating factors and discounts maintained in 2008
 - Independent merit rating plans allowed
- October 19 2007: Filing standards released
 - Capping rules extended to collision & comprehensive
- November 1 2007: Rating factors
 - Sex, age, credit information
 - Driver assignment (Rule 28) maintained
- November 8 2007: No tiering based on prior BI limits
- November 9 2007: Group Marketing
 - Restrictions on deviations & support
- November 13 2007: Model Year/Symbol Factors
- November 14 2007: Mandated filing format finalized
- November 27 2007: Final rates, rules & manual due

Solution All Hands on Deck

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- Large multi-disciplined team established
 - Actuarial (all areas pitched in)
 - Modeling team
 - Systems
 - Others (Legal, Marketing, Senior management)
- Brainstorming sessions
- Decision to move to countrywide multivariate product
- More questions than answers on what the rules will be

Solution Overview - Actuarial/Modeling

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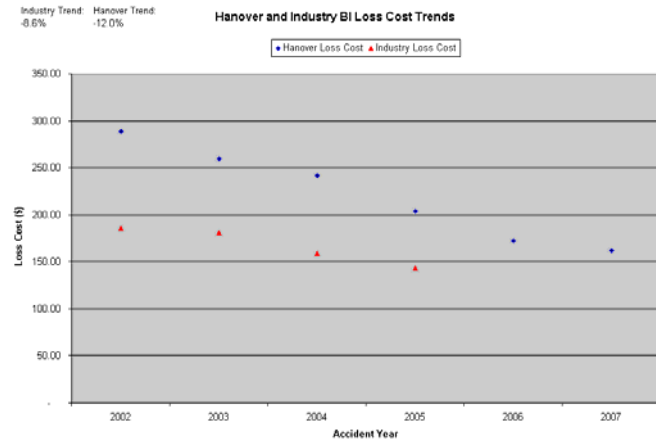
- Rate indication
- Ad hoc analyses/Knowledge Transfer
- Modeling of MA specific parameters needed by countrywide multivariate product
- Capping – Transition Factor Adjustment Table
- Measurement of impact on customers/agents
- Development of competitive “rate assessor”

Solution Rate Indication

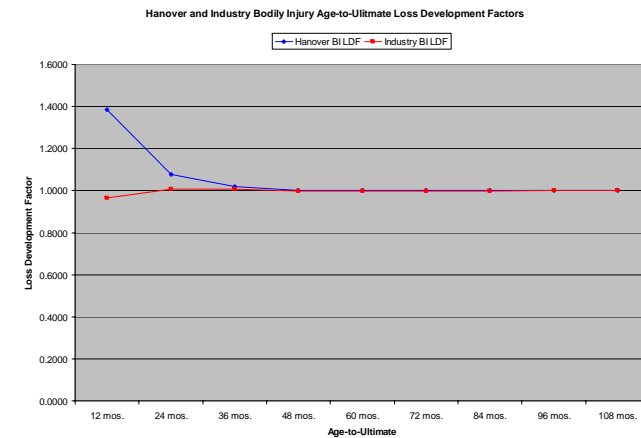
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- First MA Automobile filing in a very long time
- Evolving framework
 - New AIB datasets
 - State requirements, what business to be included, state mandated format
- Creation of numerous indications scenarios
 - Rolling 12-month data as at 6/30/2007 vs. 12/31/2006
 - Expense assumptions including LAE
 - Voluntary Business versus Total Business
 - MAIP assumptions
- DOI expecting rate reductions

- Loss trends
 - Split retrospective from prospective



- Loss development



- Yr weights - Busche Method

Busche Method

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- Systematic method to select year weights
 - Explicitly accounts for stability (i.e., retention and growth)
 - Replaces traditional (ad hoc) year weight selections
- Calculate C_i for each year in the analysis; latest year $i = 1$

$$C_i = \{(\text{retention}\%) / (1 + \text{growth}\%)\}^i$$

$$(\text{Year weight})_i = C_i / \sum C_i$$

Example

- Estimate based on 3 prior years of data; Retention rate = 90%, Growth rate = 5%

$$C_1 = \{0.9 / 1.05\}^1 = 0.8571$$

$$(\text{Year Weight})_1 = 0.8571 / 2.2213 = 38.6\%$$

$$C_2 = \{0.9 / 1.05\}^2 = 0.7346$$

$$(\text{Year Weight})_2 = 0.7346 / 2.2213 = 33.1\%$$

$$C_3 = \{0.9 / 1.05\}^3 = 0.6296$$

$$(\text{Year Weight})_3 = 0.6296 / 2.2213 = 28.3\%$$

$$\sum C_i = 0.8571 + 0.7346 + 0.6296 = 2.2213$$

What Product will work in MA?

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- 4/2008 Rates had to comply with DOI regulations:
 - What factors were allowed
 - Relationship between factors
 - Rates within +10% of 4/2007 on most coverages and certify to this effect

- Decision time:
 - Deviate off of Legacy rates
 - Move to (countrywide) multivariate product
 - Rating Algorithms can be very different (see next slide).
 - Need to populate rates & factors and figure out how to cap



Comparison of Rate Structures Legacy versus Company

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4/1/07 Decision Rates (Legacy)

\$ Base Rate (Cov, Terr, MA Class)

- x Limit Factor
- x Annual Miles Discount
- x Multi Car Discount
- x Class 15 Discount
- x Safe Driver Insurance Plan Factor
- x Public Transit Discount
- x Group Discount
- = Final Premium

4/1/08 Company Rates

- Underwriting tiers
- Underwriting companies
- Proprietary Merit Rating Plan
- Driver age
- New discounts (good student, student away, account credit, electronic processing discount)
- Cap versus Legacy

PLUS: one to many in both directions

Adjustments to Countrywide Product

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- Data preparation
 - Creation of a historical/in-force dataset mapped to both Legacy and countrywide product rating variable codes.
 - Required for
 - Modeling of required factors
 - Extension of exposures
- Modeling Phase
- Factor selection phase
- Extension of exposures
 - Quantify impact of new rates, including capping
 - Confirm rating is compliant with Regs.
 - Disruption on book, by segment, agency, location, etc
 - Source of required rate comparisons for DOI website

Adjustments to Countrywide Product

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- Need to derive new variables based on raw data
 - Proprietary Merit Rating plan based on driver incident histories
- Programmed and tested current and proposed rating algorithms
 - Aggregate tests
 - Policy-level differences investigated
- Produced databases suitable for modeling and calculating rate impacts.

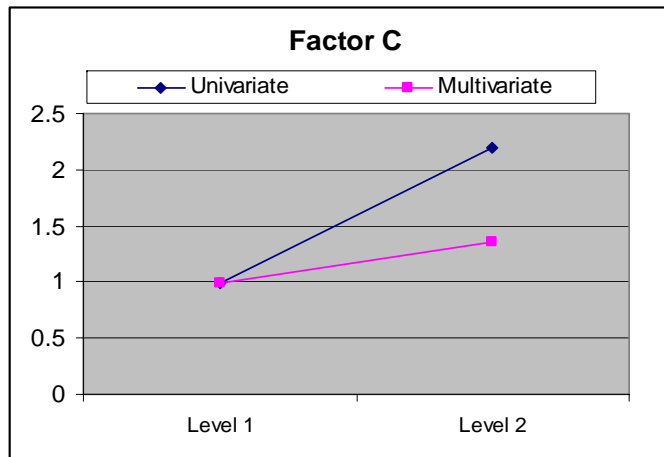
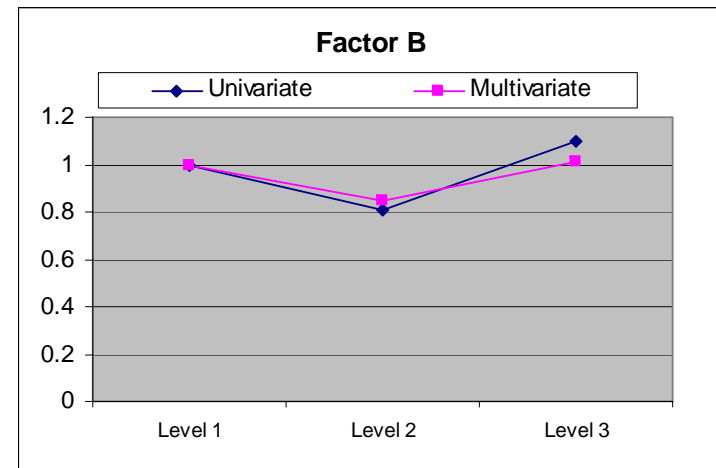
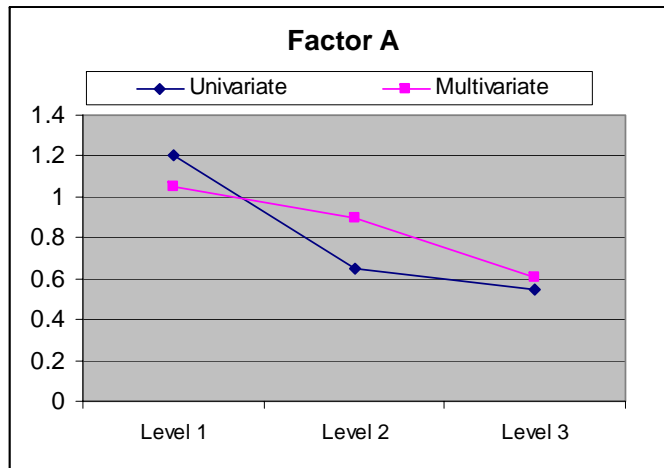
Adjustments to Countrywide Product

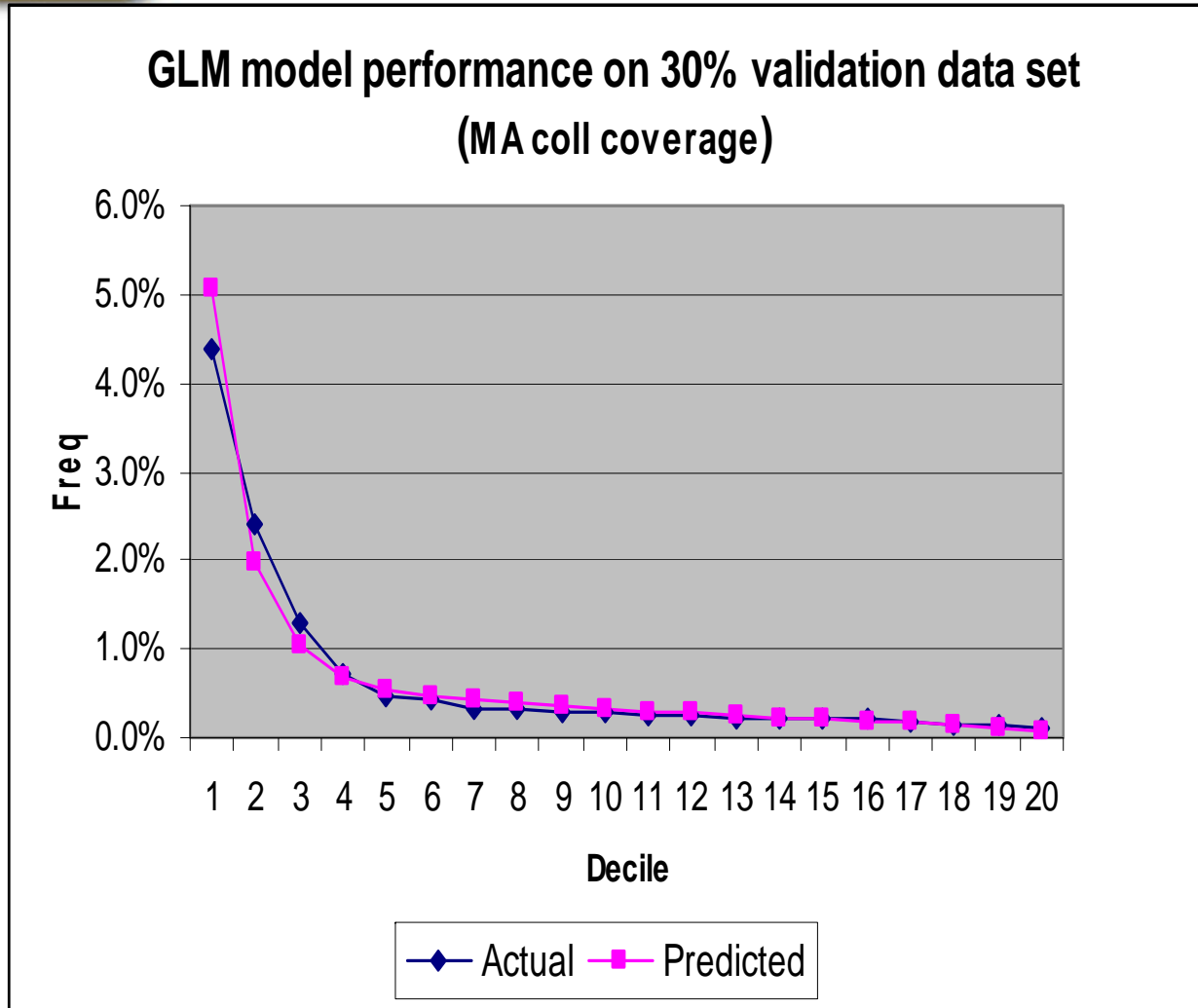
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- Fitted rate factors using Generalized Linear Model (GLM)
- Significant benefit over one-way analyses
- Tested to ensure not over fit

Sample - GLM Application

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Note. Model has consistent performance on holdout dataset, which indicates the model is not over fitting.

- Balance between:
 - Modeling
 - Intuition, including Legacy factors and countrywide factors in other states
- Post-filing, loss ratio tests confirmed enhanced performance of proposed factors
- How will we comply with the +10% mandated cap?
 - TransFAT (Transition Factor Adjustment Table)

TransFAT Creation

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1. Need to apply factor at end of rating to make sure rate change for any coverage was between XX% and +10%. First step was to calculate overall rate change. Getting a capping factor was then simple algebra. Full rerate of 4/07 rates not option.

2. Express 4/07 and 4/08 rates as a product of n factors.

$$\text{2007 Rate} = F_1 * F_2 * \dots * F_n$$

$$\text{2008 Rate} = F'_1 * F'_2 * \dots * F'_n$$

3. Rate Change factor can be expressed as product of factor changes as follows:

- $2008 \text{ Rate} / 2007 \text{ Rate} = (F_1 / F'_1) \times (F_2 / F'_2) \times \dots \times (F_n / F'_n)$

4. Factor changes were calculated using extension of exposures, see next slide.

5. Constructed TransFAT as product of all grouped common change factors.

Notes

1. If factor (say F'_j) is new for 2008, corresponding 2007 factor (F_j) is set to 1.000

How do we know it works?

- Intuition says it should
 - For each risk in our in-force book (i) estimated overall change as product of factor changes and (ii) compared to change calculated via extension of exposures.
- Estimates matched exactly

- Rerate of our in-force under key competitor rate programs
 - Our rate program is amongst the most complex
 - Required deconstruction of rates via competitor filings
 - Used Winrater to validate SAS tool was working
- Developed “user friendly” tool to rank Company versus competitors

Rules for 4/1/2009

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- Companies restricted to charge not more than MAIP rate for predefined package (20/40 BI, \$5k property damage, \$8k PIP& 20/40 Uninsured Motorist)
 - Companies must charge assigned risks the lesser of the company rate and MAIP rate
 - Restrictions by class & territory relaxed somewhat
- Cap our rates at the MAIP rates via TransFAT

Rules for 4/1/2010

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- Companies restricted to charge not more than MAIP rate for predefined package (20/40 BI, \$5k property damage, \$8k PIP& 20/40 Uninsured Motorist)
 - Only applies to customers w/ no prior lapse and less than 5 points
- Companies must charge assigned risks the lesser of the company rate and MAIP rate
- Must limit rate increases to +25% versus last year's rates
 - Cap our rates via TransFAT

Massachusetts Auto Market Post 4/1/2008

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- Number and size of voluntary market players
 - In 2007, this number stood at 19 insurers
 - A number of “new” entrants have entered/returned; 9+

- Availability of coverage and information to consumers
 - Agency appointments in subsidized territories
 - Many former ERPs received voluntary contracts
 - Dissemination of information to consumers easier
 - InsureMASS website: www.insuremass.doi.state.ma.us
 - Consumer Information & Insurance Premium Comparison Website
 - According to a Massachusetts Insurance Federation Study 71% of consumers indicated that managed competition for auto insurance is better for the consumer because there are more choices of products, prices and companies.



Massachusetts Auto Market Post 4/1/2008

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- Product Innovation - New rating variable, discounts and coverages:
 - Road Density
 - Prior Bodily Injury Limit
 - Current Bodily Injury Limit
 - Tenure w/ Company
 - Good Student Discount
 - Student Away Discount
 - Electronic Processing Discount
 - Replacement Cost Coverage
 - Pet Insurance
 - Enhanced Towing
 - OEM Parts endorsement
 - Group discounts

- Nature and size of residual market
 - Assigned Risk Plan
 - Credit offer designed to keep it manageable in size



QUESTIONS?

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- George R. Busche; A Method to Include Multiple Years of Data in a Company's Rate Indication; CAS Forum - Special Edition 1993, Ratemaking Call Papers
- Anderson, D.; Feldblum, S; Modlin, C; Schirmacher, D.; Schirmacher, E.; and Thandi, N., "A Practitioner's Guide to Generalized Linear Models" (Second Edition), CAS Study Note, May 2005 [Note: the study note edition is a revised version of a paper from the CAS Discussion Paper Program].