



# PRICE OPTIMIZATION

CAS 2007 Annual Meeting  
Alice Gannon, EMB America

# Price Optimization Outline

- Background
- Inputs and Challenges
- Summary

Purpose: Discuss Price Optimization from a company actuary's perspective.

## Outline:

- ❖ Background
- ❖ Inputs and challenges
- ❖ Summary

# Price is a Key Lever of Performance

- Background
- Inputs and challenges
- Summary

- ❖ Pricing should support corporate goals and overall business strategy

Short Term



Financial

Market

Long Term

# Current Pricing Abilities

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## ❖ Pricing performance scorecard for the insurance industry

Task	Ability
Aggregate loss costs	✓ ✓
Granular loss costs	✓
Price competitive position	✓ ✗
Policyholder reaction to price	✗ ✗
Bringing it all together	✗ ✗

# Price Elasticity and Optimization

- Background

- Inputs and Challenges

- Summary



Price elasticity models dramatically help improve understanding of policyholder behavior toward price



Price optimization models can systematically pull all relevant information together to determine the best actuarially sound prices to support company goals.

# What Price Optimization is NOT

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• Inputs and Challenges

• Summary

- ❖ **A REPLACEMENT FOR PRICING STRATEGY**
  - Optimization helps you formulate and implement your strategy
- ❖ **EXPLOITATION OF LOYAL CUSTOMERS**
  - Prices should stay in the actuarially sound range
- ❖ **MULTI YEAR PRICING PLAN**
  - Premiums are still reviewed frequently
- ❖ **BLINDLY TRUSTING A BLACK BOX**
  - Judgment and risk control critical

# Why Optimize Prices?

- Background
- Inputs and challenges
- Summary

- ❖ Optimization capabilities now exist and competitive pressure to use them is mounting

## Business Reality

- Universal desire for profitable growth
- Increasing acquisition costs
- Data, computing power and statistical tools make optimization feasible
- Scarcity of technical pricing resources
- Competitors are optimizing prices

## Optimization Benefit

- Both profit and volume improvement
- Maximize value from current portfolio and new business flow
- Increase effectiveness of marketing messages
- Align strategy across multiple new business distribution channels
- Deploy scarce resource towards greatest value - adding activities
- Optimally moderate renewal increases
- Counter potential loss of competitiveness



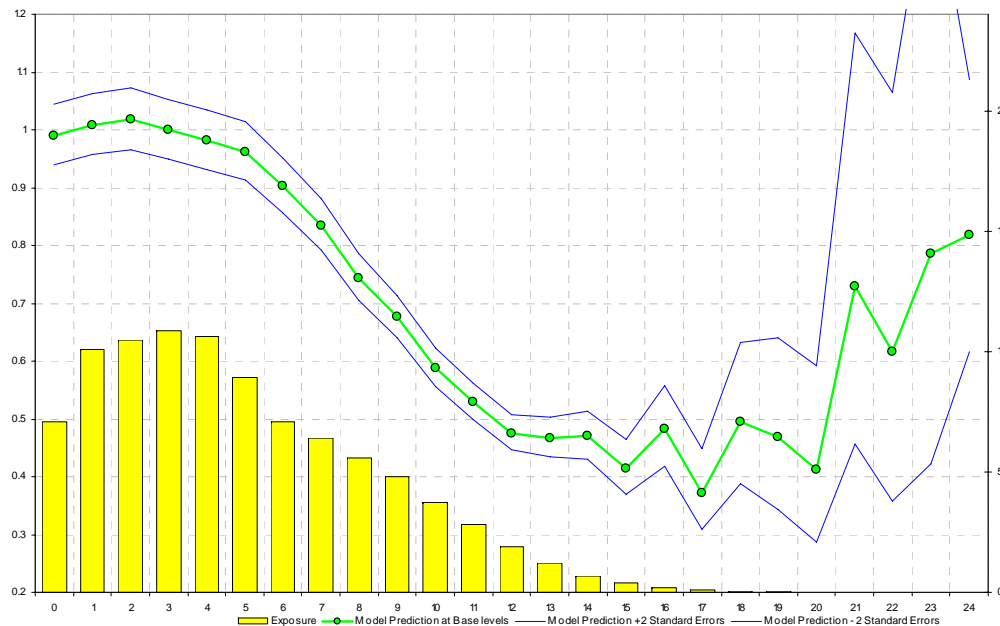
# Price Optimization Inputs and Their Challenges

- ❖ Actuarially sound range of estimated costs
- ❖ Competitive position
- ❖ Price elasticity
- ❖ Company's objectives
- ❖ Constraints



# Estimated Costs

- ❖ Craft well
- ❖ Use all available information
- ❖ In Price Optimization, errors will be ruthlessly exploited!





# Competitive Position

- ❖ Price elasticity varies with the competitive position
- ❖ Easy to get lots of competitive information
- ❖ Hard to get complete & timely competitive information
- ❖ Competitive position more important for measuring elasticity of new business than renewing business

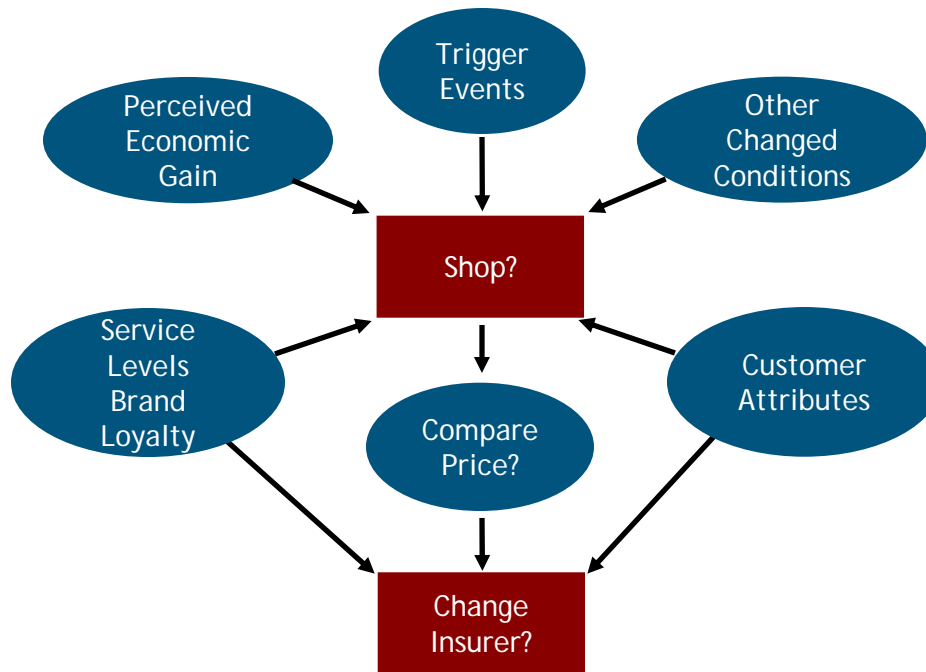
# Competitive Information

• Background

• Inputs and challenges

• Summary

## ❖ The human decision making process



❖ Customer attributes and attitudes

❖ Company triggered changes

❖ Customer triggered changes

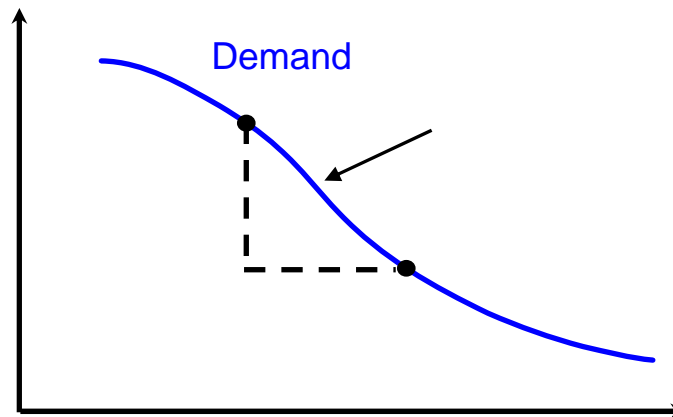
❖ External influences

## ❖ Key price elasticity variables

- Premium/premium change
- Competitive position

# Price elasticity model

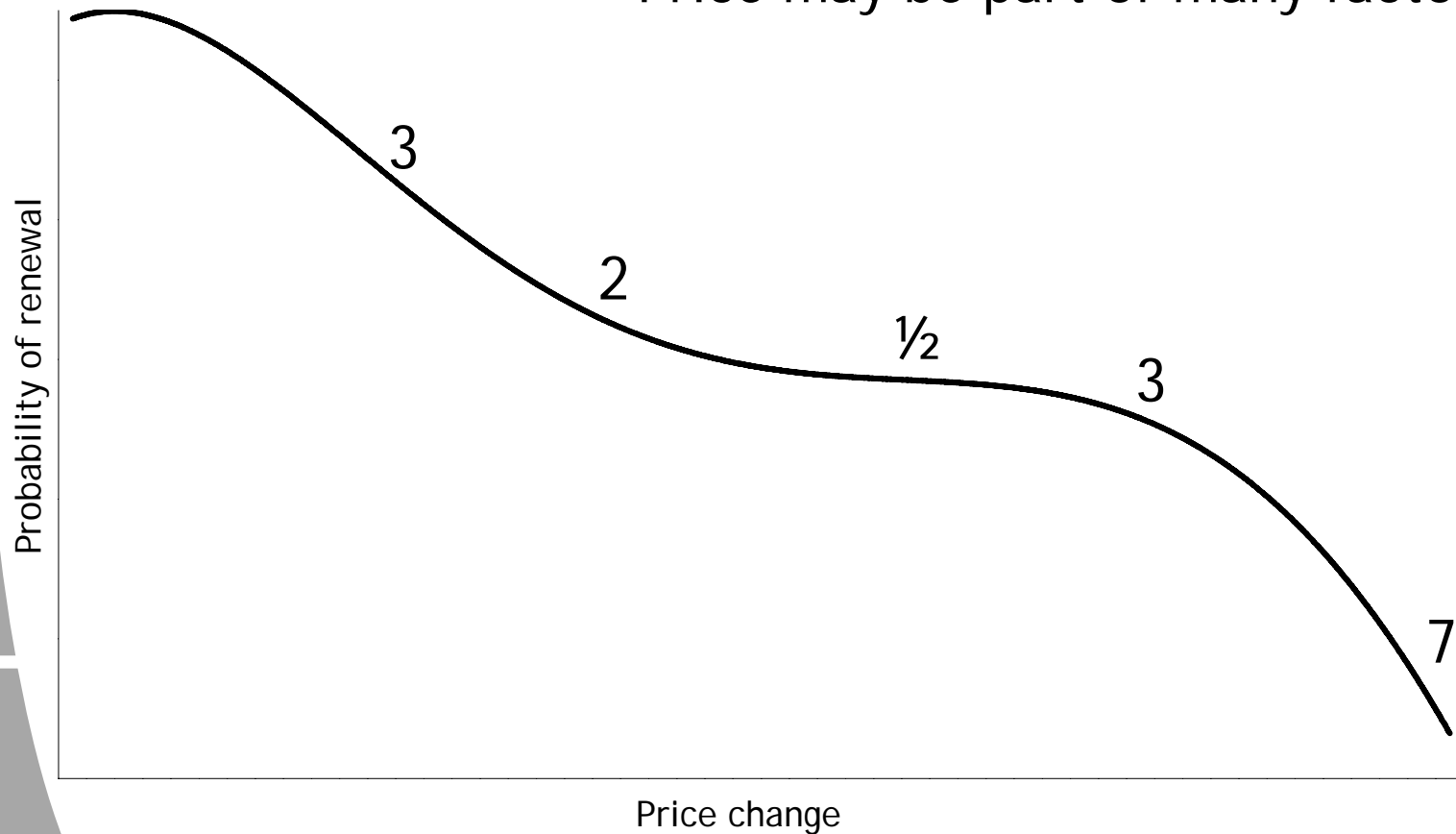
- ❖ Price optimization requires a model of customer price elasticity which is used:
  - to predict renewal retention rate or new business conversion rate at a given price
  - to predict how retention or conversion rate will change if the price is varied



Price elasticity model is constructed from statistical analysis of historic customer purchasing behavior

# Modeling elasticity - issues

- ❖ "Policyholder X has elasticity Y" ❌
- ❖ Don't assume straight lines
- ❖ Price may be part of many factors

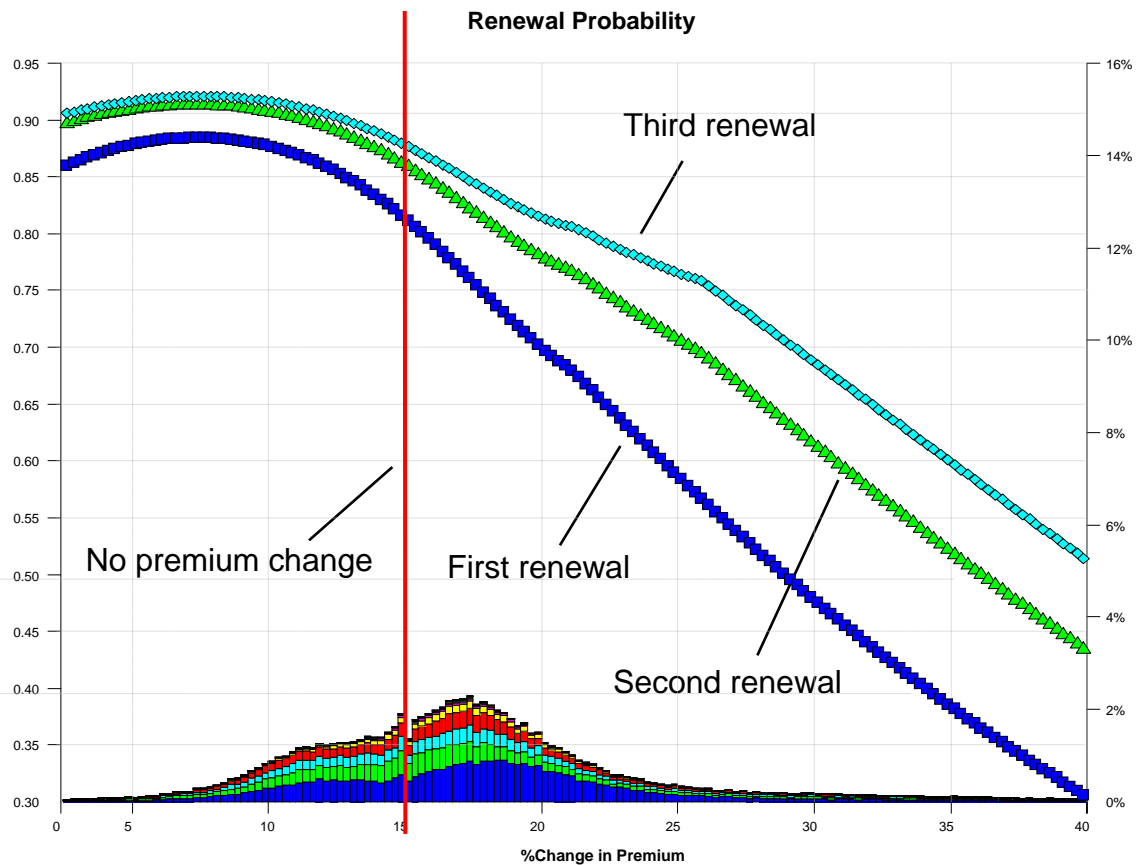




# "But I can't do price testing"

- ❖ You have what you have
- ❖ If range is limited, scope can be limited
- ❖ Any rate change can provide valuable price elasticity information
  - start collecting now!

# A Real Price Elasticity Example - Tenure



# Price Elasticity

- ❖ As with loss cost models, good judgment needed in analyzing and modifying elasticity models.
- ❖ Involve everyone you can who has insight into customer behavior!





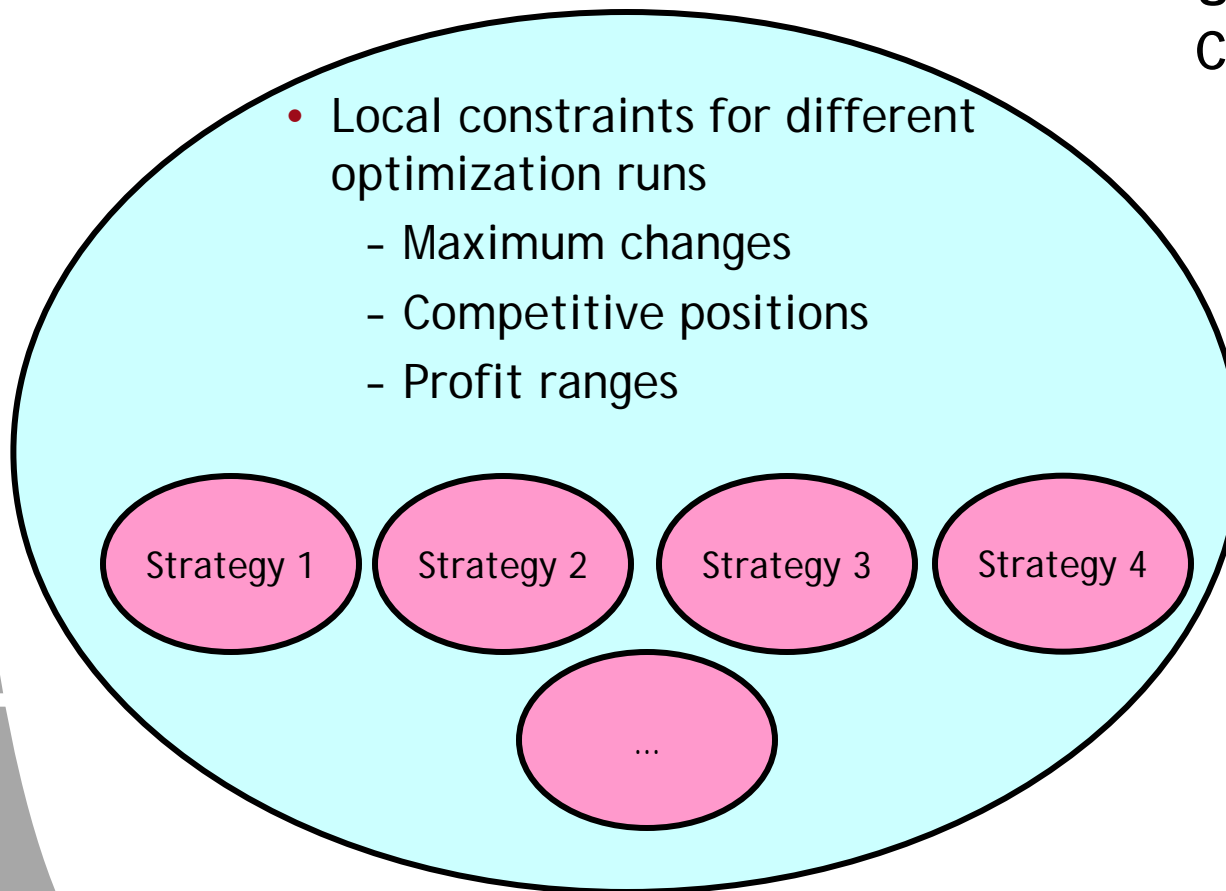
# Company Objectives

- ❖ **This could be the hardest part!**
- ❖ Start with stated profit & growth objectives.
- ❖ Determine all the sub-objectives & strategies. These may not be explicitly stated in the plan but are very real!
- ❖ Determine mathematical trade-off among the detailed sub-objectives. (example: Willing to lose one current customer in top priority segment A if we can add 2?, 5?, 10?) new customers from low priority segment F)
- ❖ **What-If scenarios are a key tool to getting this right!**

# Constraints

- Background
- Technical
- Scenarios
- Optimization
- Rates
- Results
- Summary

- Wide array of constraints must be reflected in the solution



- Universal Constraints
  - Regulatory
  - Legal
  - Corporate



# Summary

- ❖ Price Optimization can dramatically improve a company's financial AND growth performance.
- ❖ Don't let the challenges intimidate you. A price optimization strategy does not have to be "text book perfect" to add great value!
- ❖ Pricing Actuaries should lead the effort but it will be most successful with a collaborative effort of multiple disciplines.