

Price Optimization II

The next revolution in personal lines pricing

Mark Airey
CAS Predictive Modeling Seminar,
11 October 2007

Agenda

- What is price optimization?
- Looking beyond a risk based approach to pricing
- How and why customer behavior should be factored in to the pricing process
- Practical considerations

Price optimization in practice

- Flight: London - Las Vegas
 - Return Friday \$2,876
 - Return Sunday \$1,136

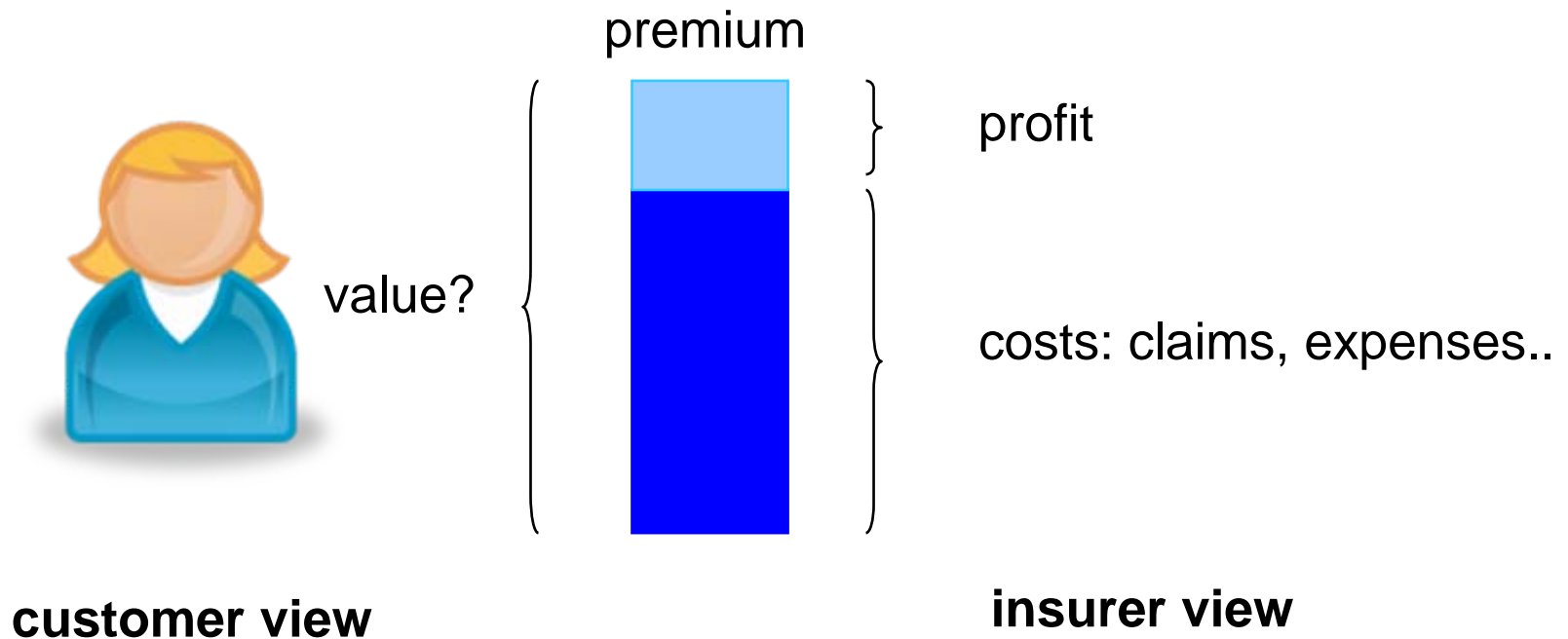
- Riviera Hotel: Standard Room
 - Low Season \$49
 - High Season \$225

What is price optimization?

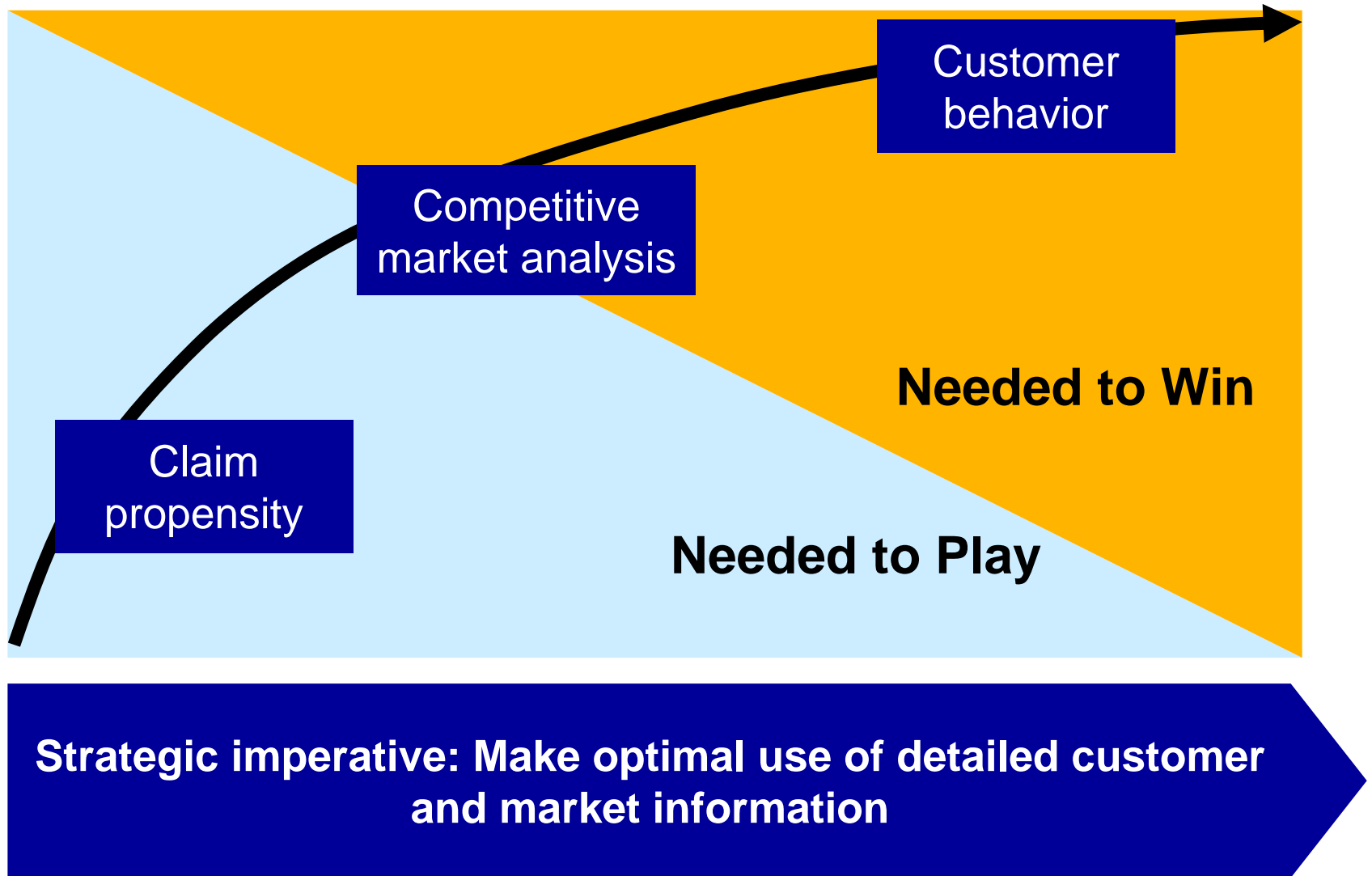
The **process** of setting prices to maximize a pre-defined measure of **customer value** subject to a company's **strategic and business objectives**

What is price optimization?

- Integrating 'cost-plus' with 'demand-driven customer oriented' pricing approaches



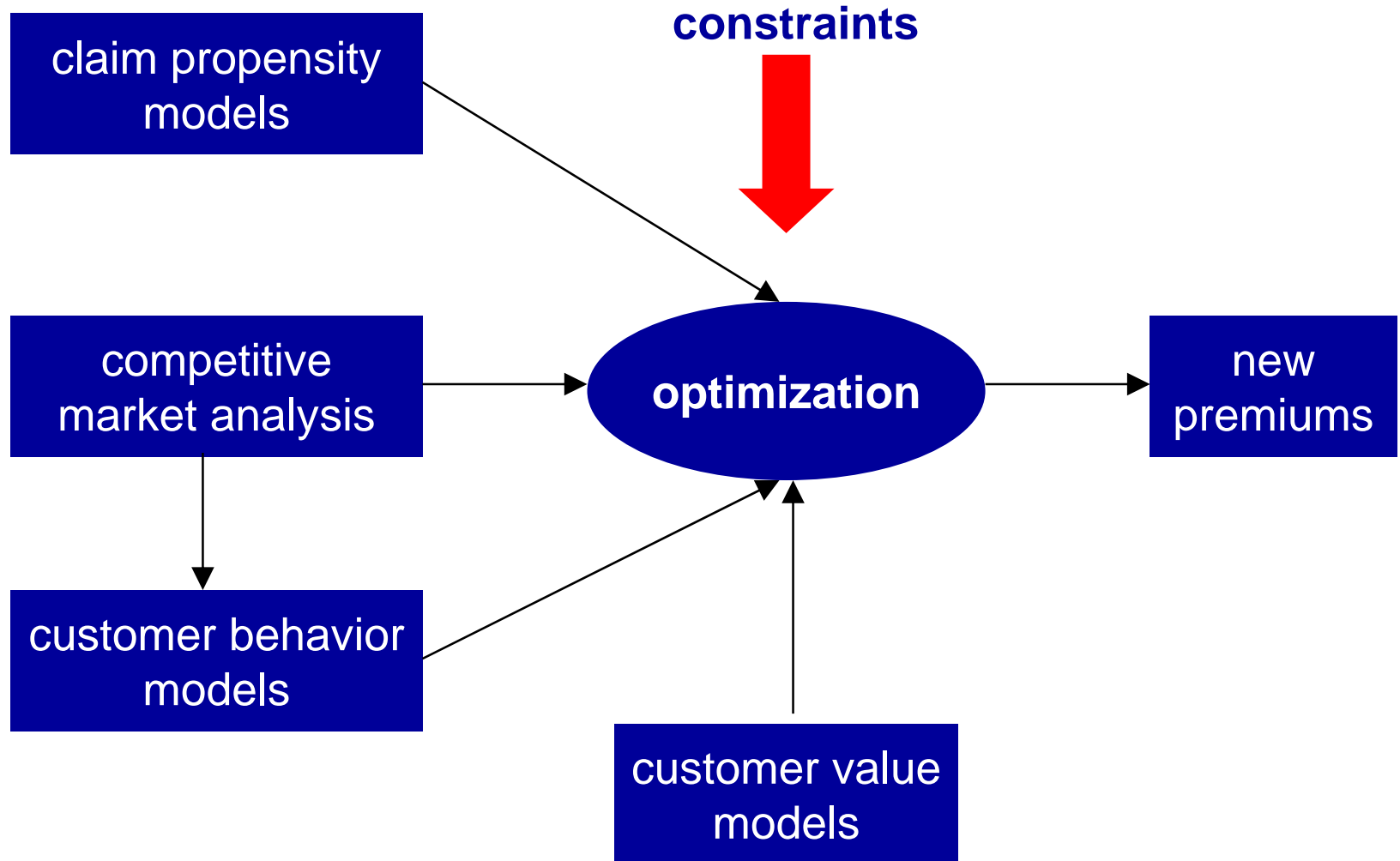
The journey to price optimization



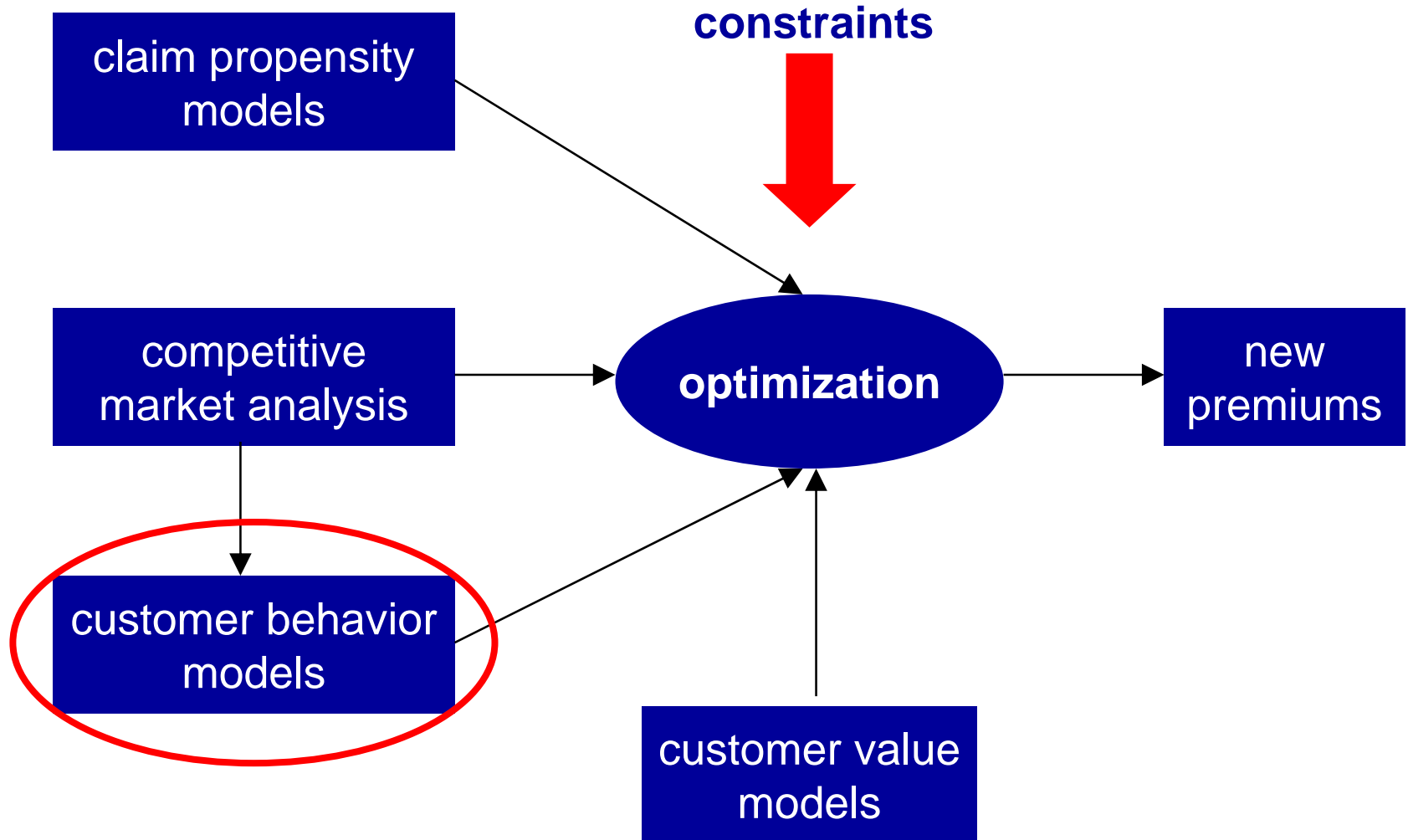
The benefits of price optimization

- Understand your marketplace better
- Insight into how prices impact performance
- Quantifiably balance profits and market share
- A stronger pricing governance framework
- Ultimately.....a sustainable increase in profitability

Optimization process

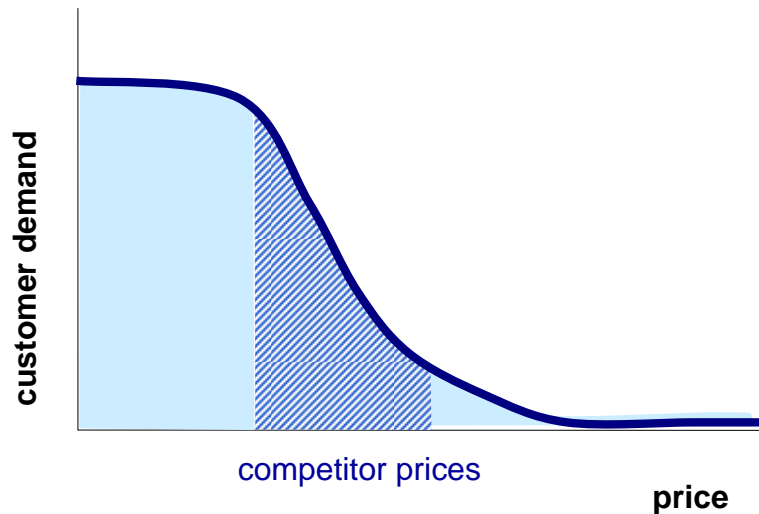


Optimization process



Customer Behavior Models

Price elasticity



% change in volume

% change in price

customer
risk factors distribution channel other attributes
relationship
length depth nature
competition
brand marketing product
other
price movements external factors

Measuring price elasticity

- Price testing
 - clones the rating structure to allow parallel testing
 - measures how conversion and retention rates vary by price
- Benefits
 - Accuracy
 - Speed
 - Transparency
- Operational/financial considerations

Measuring price elasticity

- Example
 - personal auto - new business
 - average risk premium of \$1,000
 - current profit loading 10%
 - varying a fixed profit loading across portfolio
 - assessed over a 1 year time horizon

Test Group	Profit Loading	Price	Profit per Policy	Conversion Rate	Profit per Enquiry
Control	10%	\$1,100	\$100	20%	\$20.00

Measuring price elasticity

- Example
 - personal auto - new business
 - average risk premium of \$1,000
 - current profit loading 10%
 - varying a fixed profit loading across portfolio
 - assessed over a 1 year time horizon

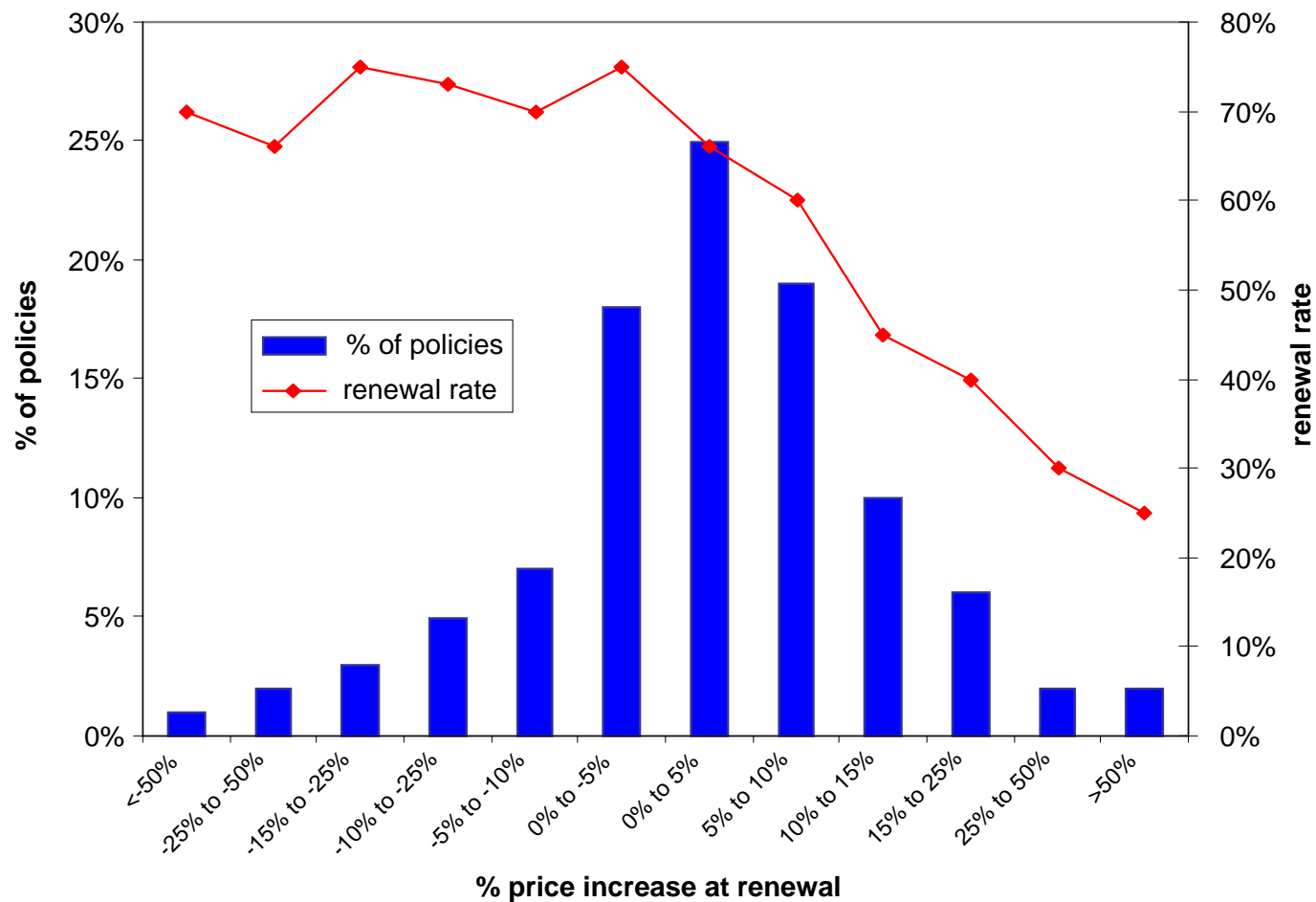
Test Group	Profit Loading	Price	Profit per Policy	Conversion Rate	Profit per Enquiry
A	6%	\$1,060	\$60	25%	\$15.00
B	8%	\$1,080	\$80	22%	\$17.60
Control	10%	\$1,100	\$100	20%	\$20.00
D	12%	\$1,120	\$120	18%	\$21.60
E	14%	\$1,140	\$140	15%	\$21.00

Measuring price elasticity

- Alternatives to price testing
 - predictive modelling techniques based on historic information
 - what were the impacts on business volumes caused by ...
 - price changes
 - competitive positioning
 - marketing promotions

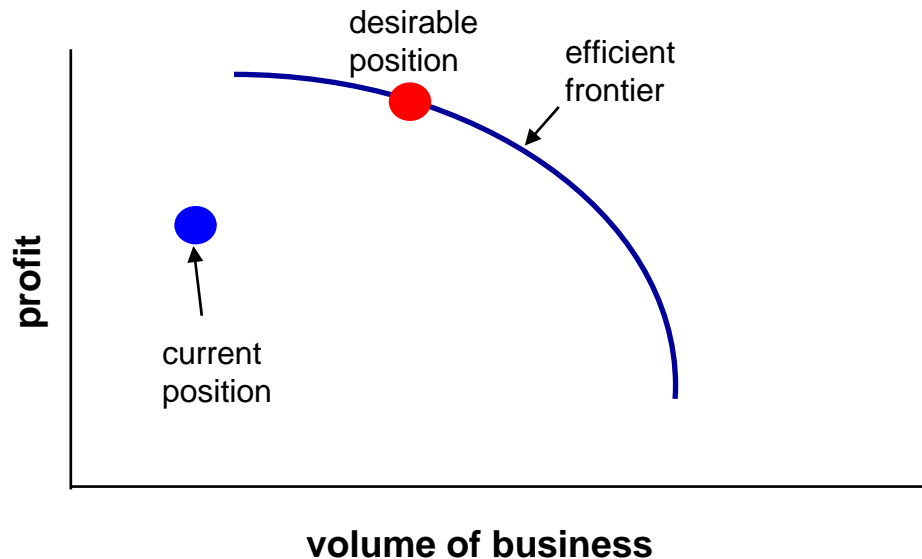
Measuring price elasticity

Renewal portfolio



Optimization – bringing it all together

- Model office – assess pricing decisions through portfolio simulation
- Optimization algorithms

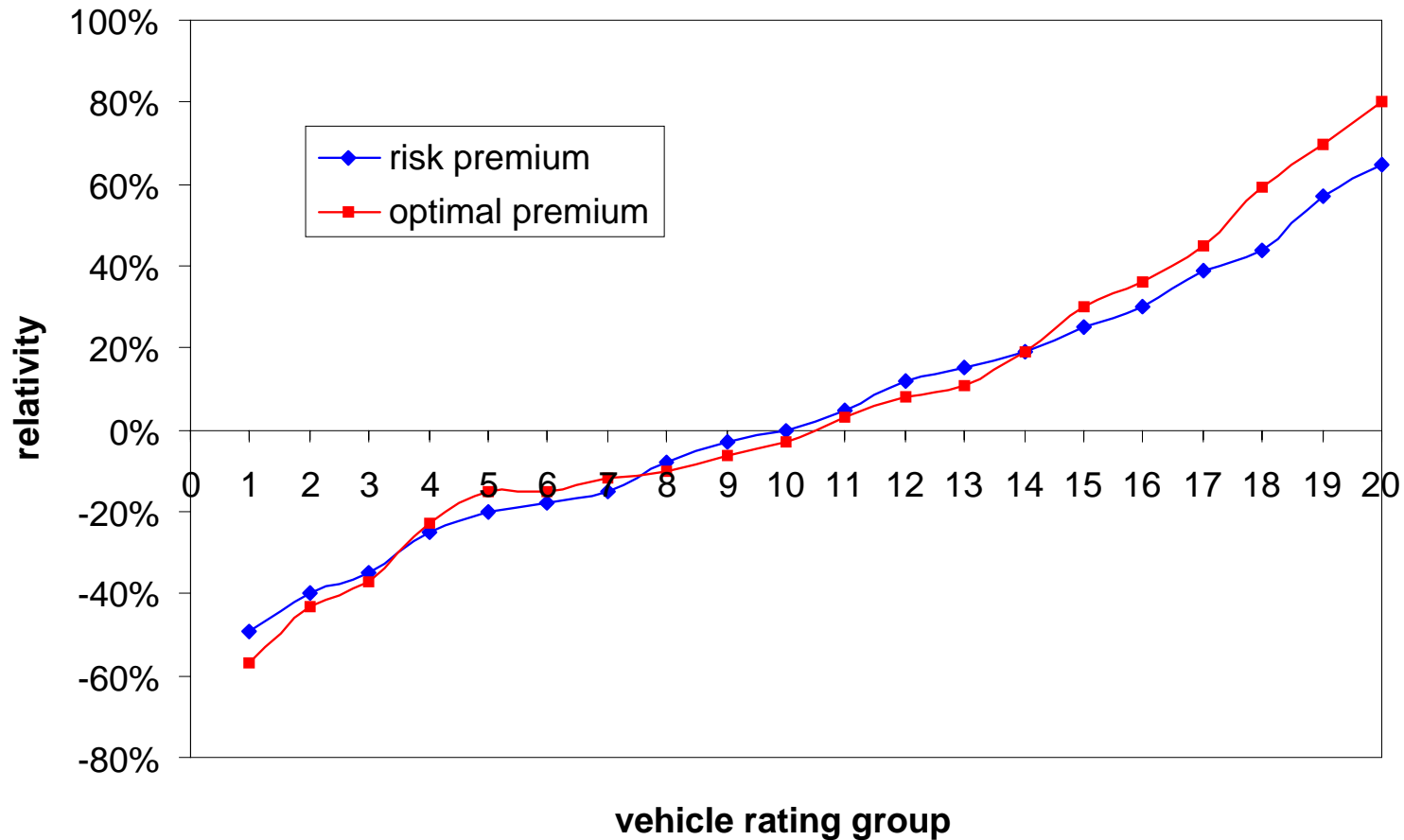


set profit loads to achieve the original objective, subject to any constraints

e.g. maximizing profitability whilst maintaining a minimum market share

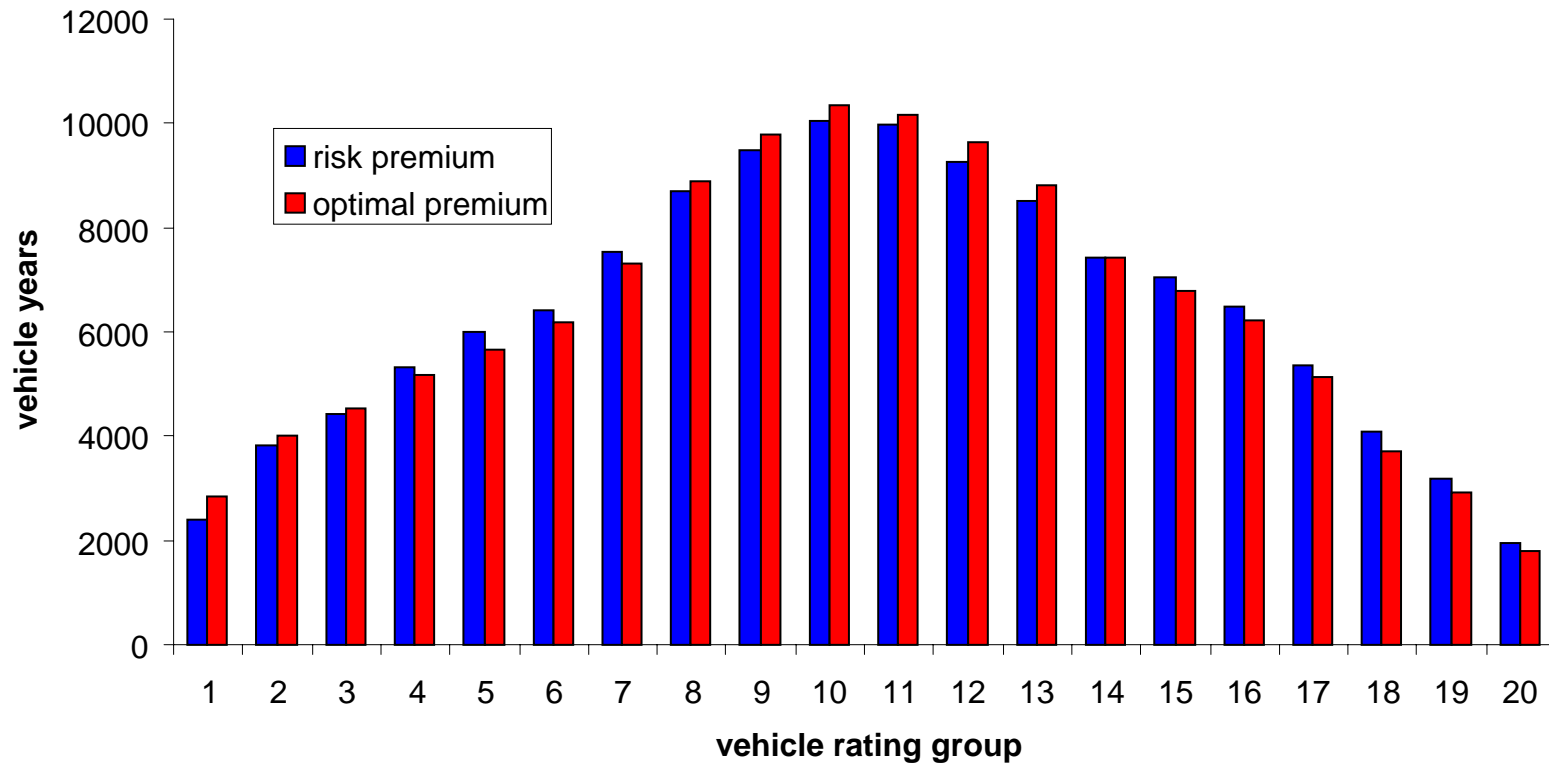
Optimization – bringing it all together

Optimizing premiums example - Auto TPL



Optimization – bringing it all together

Impact analysis



Constraints



company

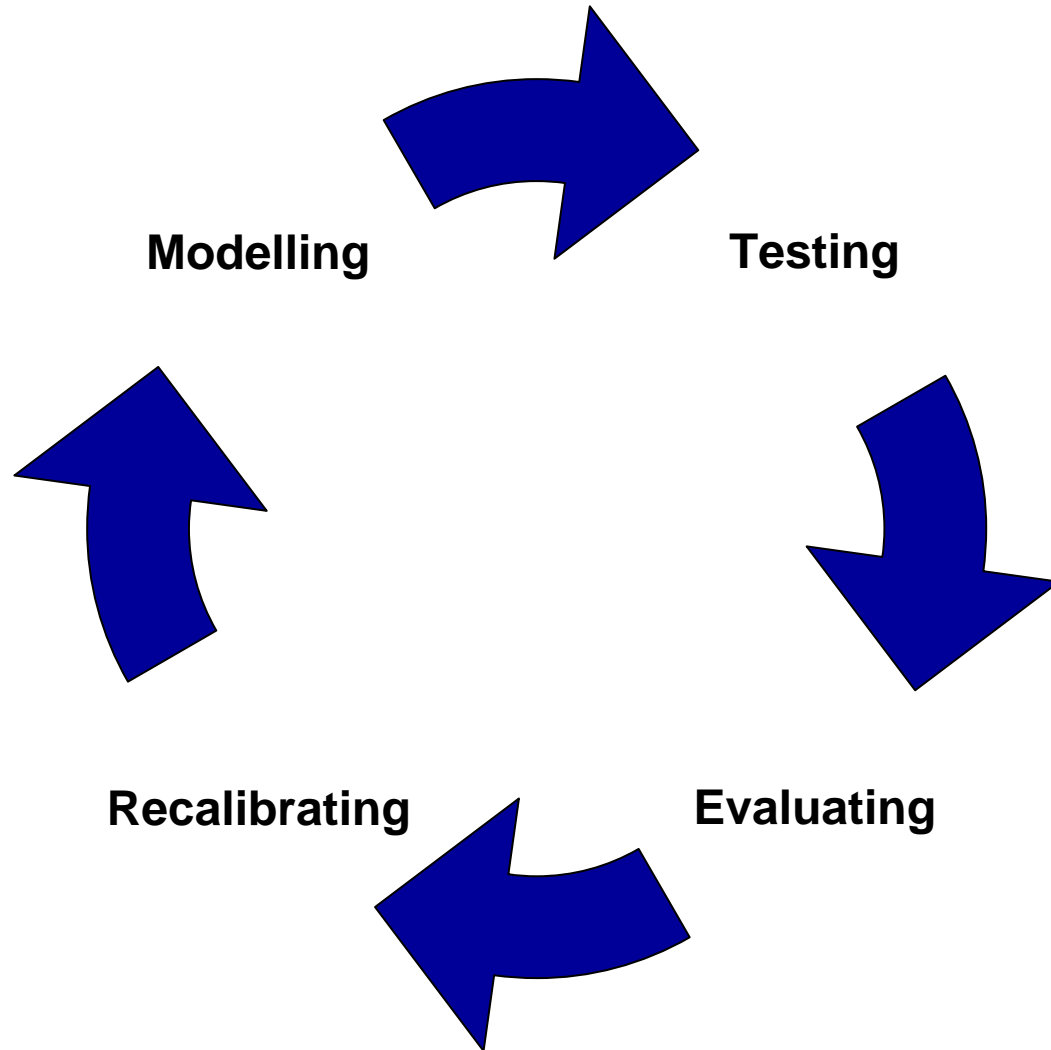


regulator



customer

Optimization – bringing it all together



What to optimize?

- personal auto insurance policy
- one year time horizon

?



Test Group	Profit Loading	Price	Profit per Policy	Conversion Rate	Profit per Enquiry
A	6%	\$1,060	\$60	25%	\$15.00
B	8%	\$1,080	\$80	22%	\$17.60
Control	10%	\$1,100	\$100	20%	\$20.00
D	12%	\$1,120	\$120	18%	\$21.60
E	14%	\$1,140	\$140	15%	\$21.00

What to optimize?

- multiple products: up-selling & cross-selling
- auto insurance + legal expenses, breakdown cover

Test Group	Profit Loading	Average price	Profit per Policy	Conversion Rate	Profit per Enquiry
A	6%	\$1,220	\$140	25%	\$35.00
B	8%	\$1,240	\$160	22%	\$35.20
Control	10%	\$1,260	\$180	20%	\$36.00
D	12%	\$1,280	\$200	18%	\$36.00
E	14%	\$1,300	\$220	15%	\$33.00

- assumes constant take-up rate

What to optimize?

- multiple products: up-selling & cross-selling
- 3-year time horizon

Test Group	Profit Loading	Average price	Profit per Policy	Retention Rate	Profit per Enquiry
A	6%	\$1,220	\$140	74%	\$79.63
B	8%	\$1,240	\$160	73%	\$80.08
Control	10%	\$1,260	\$180	71%	\$79.27
D	12%	\$1,280	\$200	69%	\$77.98
E	14%	\$1,300	\$220	68%	\$70.70

- customer lifetime value

Price optimization is...

- A process by which insurers can improve long-term profitability
- Getting to know your customers and your market better
- Integrating this knowledge with risk models
- A significant investment
- A shift in mindset
- A dynamic process
- Happening now!

Any questions.....

Contact: mark.airey@towersperrin.com