



Price Optimization in Auto Insurance Markets

Actuarial, Economic and Regulatory Considerations

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Price Optimization

**Healthy Markets, Strong
Competition, Satisfied Consumers**

Why the Controversy?

Price Optimization: What is It?

- **Significant Discussion of Price Optimization Issue in Recent Months**
- **Several States Have Issued Bulletins Addressing Its Use**
 - ◆ Requests for information in several other states
- **Each State Defines Price Optimization Differently**
 - ◆ At least 7 definitions from states; NAIC, vendors and others
- **States' Concerns Come Despite Absence of Any Discernable or Detectable Market Disruptions**
 - ◆ Competition in auto insurance markets is intense, healthy and vigorous
 - ◆ More than 99% of drivers are insured through the voluntary market
 - ◆ Absence of consumer complaints
 - ◆ High degree of consumer satisfaction with auto insurers
 - ◆ Empowered Consumers: Have more tools available today than ever before to help them shop, collect and compare prices
 - ◆ *Rates are not inadequate, excessive or unfairly discriminatory*

Definitions of Price Optimization

**States Have Defined Price
Optimization Quite Differently**

■ NAIC Actuarial Task Force Refers to Price Optimization as the Use of:

- ◆ “...sophisticated tools and models to quantify other business considerations such as marketing goals, profitability or policyholder retention.”

Adding that the...

- ◆ “...advent of more sophisticated data mining tools and modeling techniques has allowed the use of more **objective, detailed quantitative** information about the judgmental aspects of the rate-setting process instead of reliance primarily on anecdotal evidence.”

— Source: NAIC Casualty Actuarial and Statistical (C) Task Force, *Price Optimization White Paper*, May 19, 2015.

■ PO Is Effectively a Modern Tool for Solving a Very Old Problem

- ◆ Price optimization is a tool that helps reduce reliance on judgment in an environment where consideration must be given to the insurer’s need to operate profitably and over the long run in highly competitive and highly regulated markets

Price Optimization: Business Considerations Must Be Included

■ Casualty Actuarial Society's (CAS) *Statement of Principles Regarding Property and Casualty Insurance Ratemaking* Clearly States that Business Considerations Are Indeed Part of the Ratemaking Process:

- ◆ **“Conclusion:** The actuary, by applying the ratemaking principles in this Statement, will derive an estimation of the future costs associated with the transfer of risk. **Other business considerations are also a part of ratemaking. By interacting with professionals from various fields including underwriting, marketing, law, claims, and finance, the actuary has a key role in the ratemaking process.**” [Section IV, Lines 141-145]

- Source: *Statement of Principles Regarding Property and Casualty Insurance Ratemaking* (adopted by the Board of Directors of the Casualty Actuarial Society, May 1988): <http://casact.org/professionalism/standards/princip/sppcrate.pdf>

■ PO As Used by Insurers is Consistent with Actuarial Ratemaking Process

- ◆ Not a violations of ratemaking principles as has been alleged by some

- NAIC (Draft)—“...the advent of **sophisticated data mining tools** and pricing models have allowed actuaries to provide **more objective, quantitative information** about the judgmental aspects of the rate-setting process instead of relying primarily on anecdotal evidence as has been the case in the past. This process is now referred to as “price optimization.”

■ Earnix (P.O. Vendor):

- ◆ “systematic and statistical method to help an insurer estimate a rating plan factoring in a competitive environment.”
- ◆ “using mathematical algorithms to determine optimal values of rating factors to meet business goals and constraints.”

■ Maryland:

- ◆ “...[V]arying rates based on **factors other than risk of loss**, including, but not limited to:
 - a) The likelihood that a policyholder will engage in activities that result in policy turnover; and
 - b) The willingness of a policyholder to pay a higher premium compared to other policyholders.”

Price Optimization Defined...

■ Ohio:

- ◆ “While price optimization has no absolute definition, it generally refers to an insurer’s practice of varying premiums based upon factors that are unrelated to risk of loss in order to charge each insured the highest price that the market will bear.”

■ Florida:

- ◆ “...a process for modifying the insurance premium that would otherwise be charged to an insured or class of insureds in order to maximize insurer retention, profitability, written premium, market share, or any combination of these while remaining within real world constraints.”

Price Optimization Defined...

■ California:

- ◆ “...any method of taking into account an individual’s or class’s willingness to pay a higher premium relative to other individuals or classes.”

■ New York:

- ◆ “...the practice of varying rates based on factors other than those directly related to risk of loss, for example, setting rates or factors based on an insured’s likelihood to renew a policy or on an individual’s or class of individuals’ perceived willingness to pay a higher premium relative to other individuals or classes”

Price Optimization Defined...

■ Vermont:

- ◆ “...While there is no universally-accepted definition of price optimization, the practice, in some of its applications, involves the judgmental use of factors not specifically related to a policyholder's risk profile to help determine or adjust his or her insurance premium.”

■ Washington State:

- ◆ “...price optimization involves an insurer's use of sophisticated statistical analysis, often using non-insurance data, to predict a policyholder's likelihood of renewing a policy.”

Economics 101: The Ubiquitous and Uncontroversial Nature of Price Optimization

**Price Optimization is Widely Used in
Many (Most) Markets**

Price Optimization: Commonly Applied in Many Markets

- **Price Optimization is Generally Uncontroversial in the Pricing of Products and Services in Other Markets**
- **Widely Applied in Many (if not Most) Markets**
- **Pricing in Most Markets Is Dynamic (Supply/Demand Sensitive)**
 - ◆ Prices change frequently and in some markets nearly continuously
 - ◆ Prices change to balance supply and demand in markets
 - ◆ Economists refer to this as market “clearing”
 - ◆ Examples: Airlines, hotels, rental cars, electricity, gasoline, movie theaters, food producers and vendors, restaurants, fashion retailers, concert and sporting events, Uber fares are all priced dynamically according to prevailing supply and demand conditions
- **Insurance Pricing Is Very Different**
- **Not Dynamic**

What's Different About Price Optimization in Auto Insurance Markets?

- Despite its prevalence in other markets, there is no insurer operating in the US today that operates using such instantaneous, dynamic pricing models nor has any insurer indicated interest in adopting such a model.
- Insurance markets are far more constrained in terms of pricing
 - ◆ Prices change only infrequently (e.g., once per year)
 - ◆ Even those changes are often limited by regulators.
- Optimization techniques in insurance lead to small changes relative to many other industries.
- Unlike in other industries, price optimization in insurance is applied only to classes of consumers, rather than individual consumers. In other words, two individuals “*of the same [risk] class and of essentially the same hazard*” will pay the same amount for insurance.*

*NAIC Model Laws, Regulations and Guidelines 880-1, § 4G. See also Ohio Department of Insurance, Bulletin 2015-01, *Price Optimization*, January 29, 2015.

What's Different About Price Optimization in Auto Insurance Markets?

- Auto insurance markets are unusually favorable from the perspective of consumers—and regulators
- Markets are highly competitive
- Prices are highly stable, changing infrequently and gradually
- Few markets in which consumers routinely purchase products or services exhibit such a high degree of competition *and* price stability.
- At the same time, the rates that insurers do charge are *not excessive, inadequate, or unfairly discriminatory*.
- Suggests that the best way for regulators and public policymakers to manage the use of optimization technologies in insurance pricing is not through prohibitions but through observation, learning and studying the impacts on insurance markets and consumers and only then making recommendations as necessary.

Innovation in Pricing Models

**History Indicates Innovation Is
Good for Consumers, Regulators
and Insurers**

Pricing Model Innovation: Good for Insurance Consumers, Markets

- Models Used to Price Insurance Risk Have Increased in Sophistication (Literally) for Centuries
- Advances in the Understanding of Risk and Finance Coupled with Innovations in Computing Power and Data Availability Have Enabled Insurers to Improve Pricing Precision →
 - ◆ Offer ever expanding array of products
 - ◆ Price across ever larger number of risk classes
 - ◆ Fosters rate stability
 - ◆ Improve insurer financial strength
 - ◆ Reduce reliance on judgment
- Example: Insurer Innovation in Catastrophe Risk Models
 - ◆ Rates now much more closely approximate risk
 - ◆ Materially reduced solvency risk
 - ◆ But when originally introduced, cat models were routinely attacked as “black boxes” developed by insurers to pad profits

Pricing Model Innovation: Good for Insurance Consumers, Markets

- **Sophisticated Demand-Based Models Represent a Recent Innovation in Pricing Sophistication**
- **Application of these Models Increases Rigor in Pricing Decisions**
- **Reduces Reliance on Judgment**
- **Experience Demonstrates that Insurers' Embrace of New Technologies Has Always Been Consistent with Regulators' Mission to Protect Policyholders**
- **Use Price Optimization Is No Different**
 - ◆ Randomness in pricing is reduced as the role of judgment is diminished
 - ◆ Rate stability is enhanced as a result
- **NAIC Actuarial Task Force: *Rate Stability Can Lower Insurer's Cost of Providing Coverage Over the Long-Run, Leading to Larger Policyholder Longevity Discounts Over Time***

Addressing Criticisms Associated with Price Optimization

**Risk Based Rates
Impact on Low Income and
Minority Consumers
‘Big Data’**

Rates Remain Risk-Based

- Misperception/Misinformation that When Price Optimization Is Used Rates Are No Longer Risk-Based
- Insurers develop and file rating plans in accordance with state rating laws, which require consideration of risk in the determination of rate and price.
- The inclusion of “*other business considerations*” is explicitly permitted and recognized by the actuarial profession and codified in the *CAS Statement of Principles Regarding Property and Casualty Insurance Ratemaking*.
- All insurers continue to use traditional rating variables such as driving record, type of vehicle, vehicle location and many more.
- The accuracy of rates is increasing, not decreasing, over time through the continuous improvement in rating and pricing models.
- Auto insurance markets are extremely competitive. Insurers compete intensively on price, quality of service, financial strength and many other factors across every class of driver.
- Auto insurance markets today allow customers to collect and compare more quotes from competing insurers more quickly than at any time in history.

And Laws of Economics and Statistics Are Not Suspended...

- Basic economics also assures that insurance pricing remains firmly and fundamentally risk based.
- Highly competitive markets, such as auto insurance, are efficient and drive competitors out of markets where prices deviate substantially from cost-based pricing.
- Carriers offering products not priced to reflect actual costs will be quickly eliminated from the market, either because their products are overpriced and market share shrinks rapidly or because their products are underpriced, leading to a rapid deterioration in financial performance and eventually an inability to function as a going concern.
- Pricing is highly transparent and no insurer could operate on a sustained basis unless rates/prices were ultimately driven by risk.

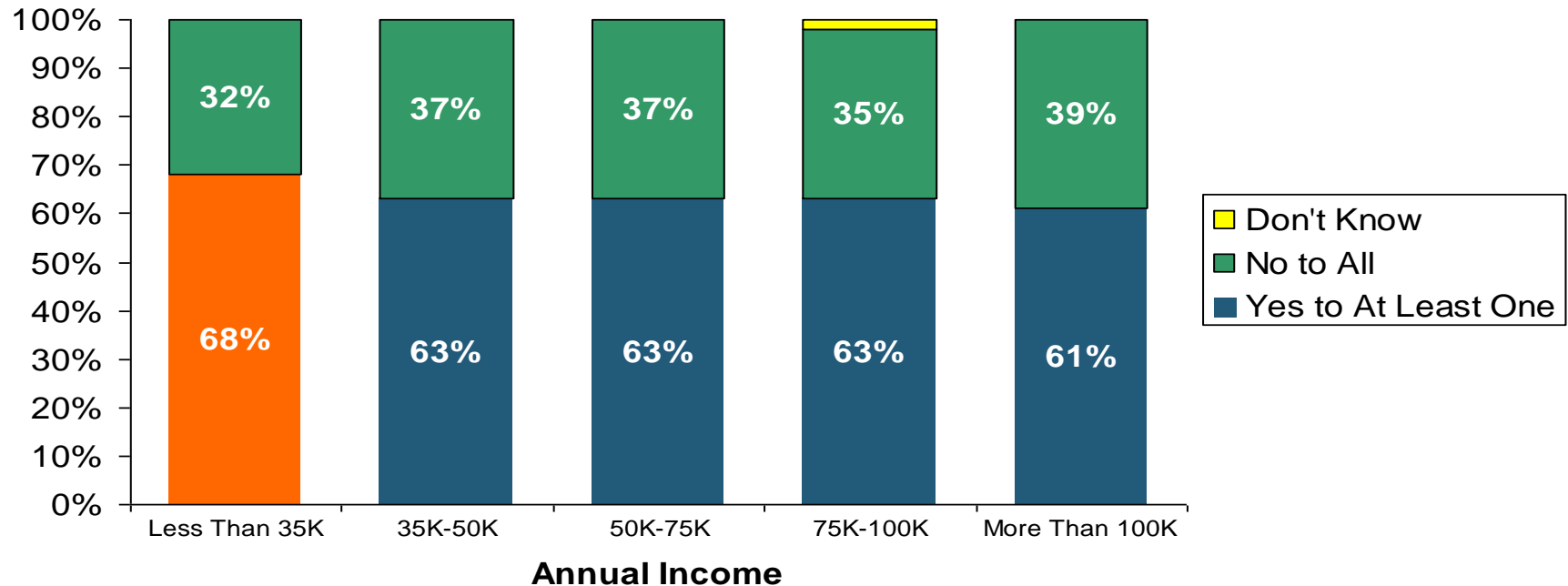
Low-Income and Minority Consumers in No Way Adversely Impacted by PO

- Assertion by Some Opponents of the Use of Price Optimization Discriminate Against Low-Income and Minority Consumers
 - ◆ No evidence offered
- Data Show that Low-Income and Minority Consumers Can and Do Shop for Auto Insurance
- Insurance Information Institute Survey:
 - ◆ 68% of consumers with incomes <\$35K shopped for insurance during last renewal compared with 61% with incomes >\$100K
- Insurance Research Council Study/Survey:
 - ◆ 33% of black consumers shopped for auto insurance within the past 12 months compared to 24% of whites.

FIGURE 1

I.I.I. Poll: Shopping for Insurance

Q. When your auto insurance policy was up for renewal did you compare prices at different insurance companies in any of the following ways (Phone, Online, Agent)?

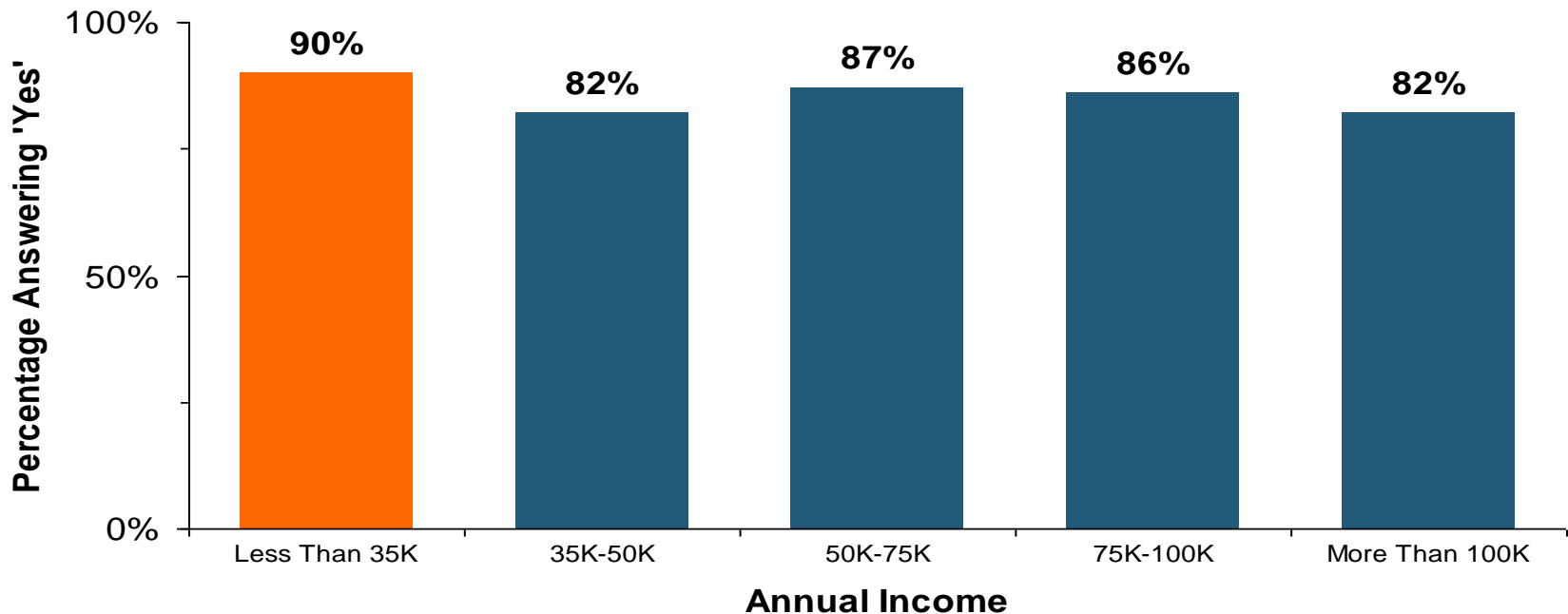


Almost Two-Thirds of Respondents Said They Compared Prices For Auto Insurers at Different Companies. Lower-Income Respondents Were More Likely to Have Comparison Shopped.

FIGURE 2

I.I.I. Poll: Shopping for Insurance

Q. Do you think you have more choices today among auto insurers than people had 10 years ago?



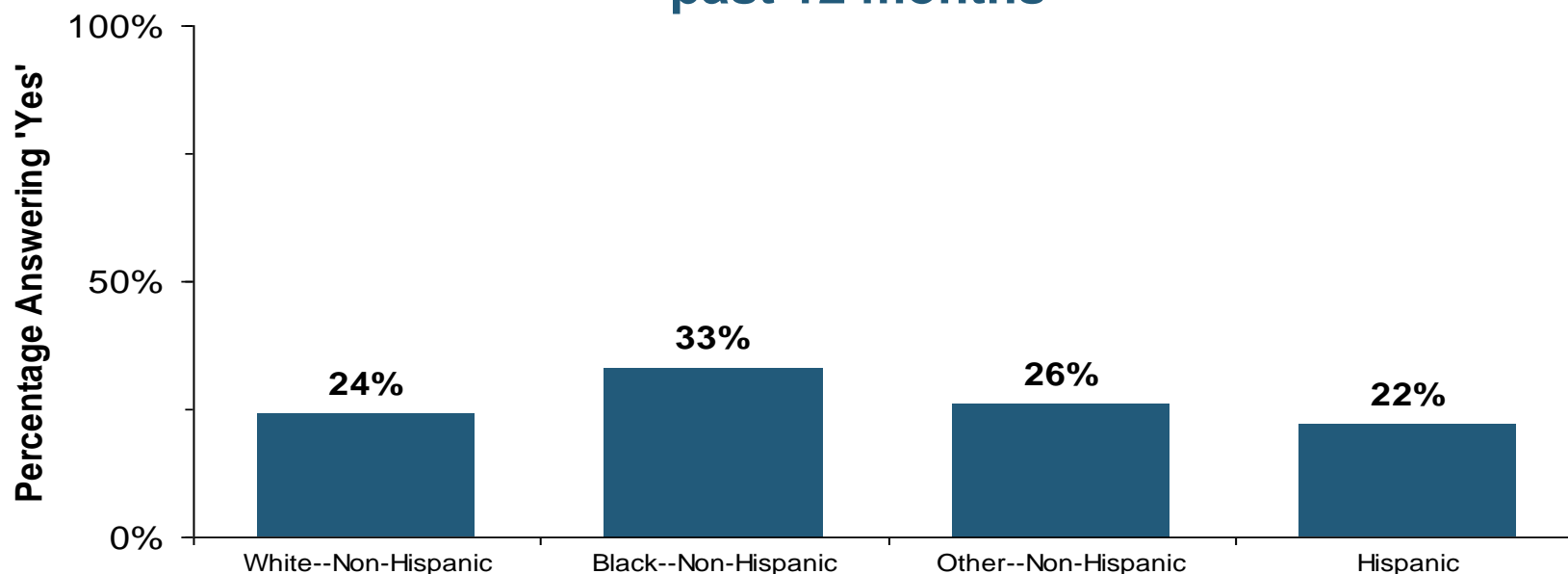
The Vast Majority of People Say They Have More Choices Among Auto Insurers Today vs. 10 Years Ago. Lowest-Income Americans Are the Most Likely to Say So.

FIGURE 3

Auto Insurance Shopping by Race/Ethnicity

Percent

Percent of survey respondents who had
shopped for auto insurance within the
past 12 months



Price Optimization and “Big Data” Are Two Different Things

- **Some Have Conflated Public’s Fears Over “Big Data” with Use of Price Optimization**
- **While More Information Is Available Everywhere, All the Time to Everyone—Insurers Continue to Collect, Analyze and Use Information in Accordance with State Rating Laws and Actuarial Principles**
- **Increased Volume of Data Has Not Impacted the Standard that Rates Are *Not Excessive, Inadequate or Unfairly Discriminatory***
- **Insurers Remain Responsive to Regulator Requests for More Detailed Information on Rating Plans and Pricing Models**

SUMMARY

- Price Optimization allows insurers to rely on *“more objective and detailed, quantitative information about the judgmental aspects of the rate-setting process instead of reliance primarily on anecdotal evidence.”*
-NAIC Task Force on Price Optimization
- Consumers benefit because the reduction in judgment reduces uncertainty, enhances price stability and can lower an insurer’s cost of providing coverage over the long run leading to larger policyholder longevity discounts over time.
- As applied by insurers, PO falls within the requirements set forth by state rating laws and actuarial ratemaking principles.
- Rates remain fundamentally determined by risk, adhering to the standard that they are not excessive, inadequate or unfairly discriminatory.
- Importantly, markets remain extremely price competitive with insurers willing and able to satisfy demand with an ever increasing array of products and services to all categories of consumer, irrespective of income or race

Summary (continued)

- The *reality* of auto insurance markets today is juxtaposed with a starkly different characterization offered by critics of price optimization. Specifically, critics have depicted auto insurance markets today as one in which pricing has become almost completely untethered from risk, models are highly subjective, routinely manipulated and produce whatever number the insurer desires. In this characterization, insurers gouge consumers at every opportunity and the poor bear the brunt of the burden.
- These characterizations of auto insurance markets today bear no semblance to the actual state of insurance ratemaking, pricing and competition and serve only to spread fear and confusion as demonstrated by recent bulletins on the use of price optimization in several states, all of which have defined price optimization differently. Consequently, states have restricted substantively different pricing techniques, some of which regulators had approved for decades, potentially leading to unintended and adverse market consequences for consumers—all in the absence of any detectable market problems.

- Innovation is good for insurance consumers. History has made this point abundantly clear. Current market conditions likewise underscore the point that innovation fosters competitive markets.
- All of this suggests that the optimal way for regulators and public policymakers to manage the use of optimization technologies in insurance pricing is not through prohibitions but through observation, learning and studying the impacts on insurance markets and consumers and only then making recommendations as necessary.