



Professionalism Considerations Regarding Price Optimization

**Casualty Actuaries of Greater New York
New York, NY
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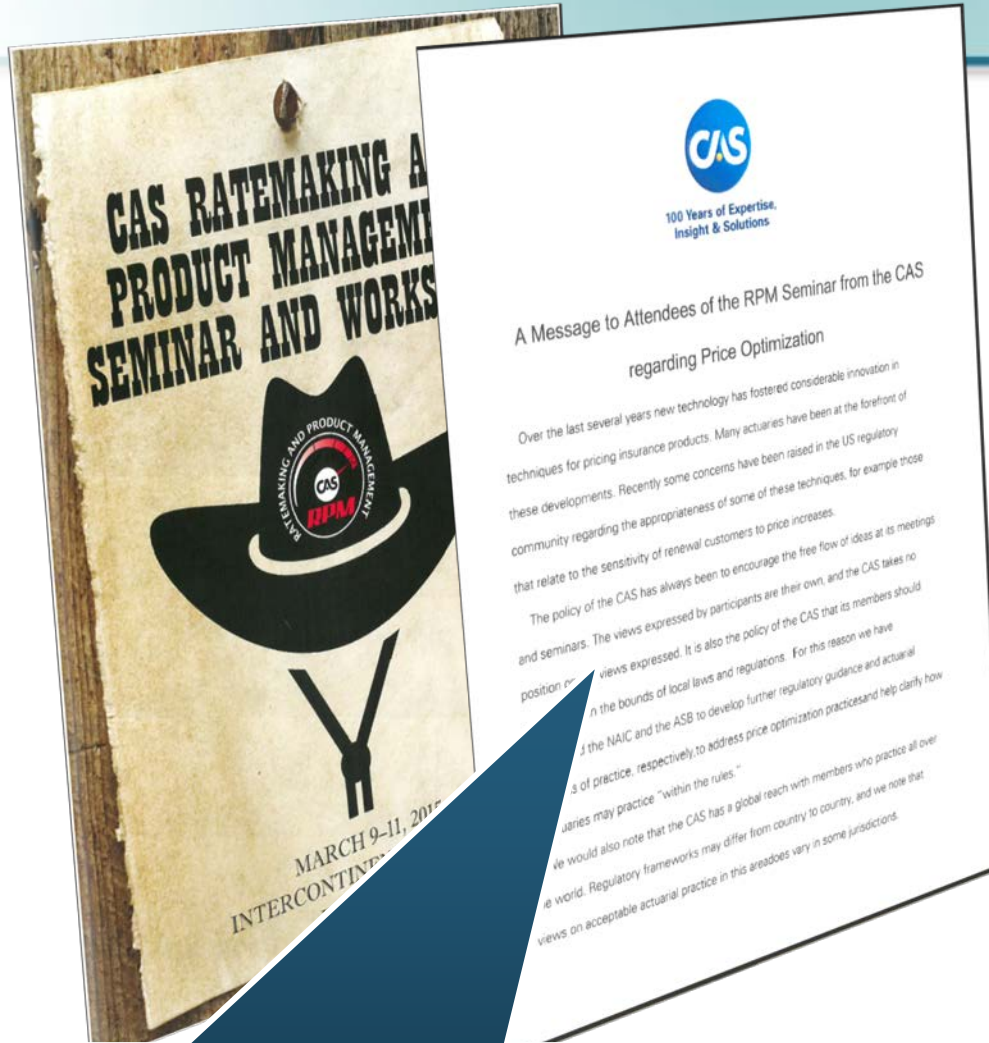
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Before We Start . . .

Oh, Boy, Is This Controversial

How Controversial?



- Banned in Four States (MD, OH, CA, FL)
- One De Facto Ban (WA)
- NY Gathering Information
- NAIC Studying
- CAS, AAA, ASB

“The Views Expressed by Participants Are Their Own, and the CAS Takes No Position on the Views Expressed. It Is Also the Policy of the CAS that Its Members Should Practice Within the Bounds of Local Laws and Regulations.”

- The Views Expressed In This Presentation Are Not Necessarily Those of the Insurance Information Institute or Its Member Companies Or Affiliates, Including the Casualty Actuarial Society. . . .
- . . . Or Me For That Matter.
- **Professionalism Alert**
 - ◆ Breaking the Law Violates the Code of Conduct.
- **Competence Alert**
 - ◆ I Haven't Personally Completed a Rate Filing in 20 Years.

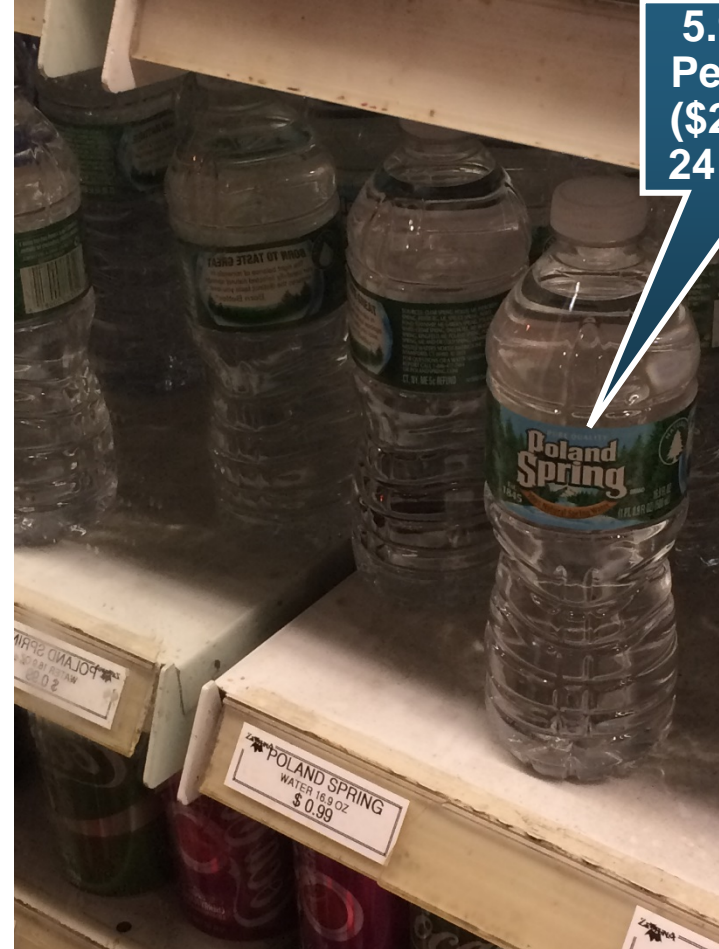
What Is Price Optimization?

Shopping for Water

1.4 Cents
Per Ounce
(\$5.49 for
24 Bottles)



5.9 Cents
Per Ounce
(\$23.76 for
24 Bottles)



320% Price Difference! Does It Cost \$18.25 to Unpack the Bottles and Keep Them Cold?

Pricing H₂O

- It's cold – charge more.
- It's near the front of the store – charge more.
- It's easy to carry – charge more.
- It's Memorial Day – charge *less*.
- “What the market will bear.”

None of These Are Related to Projected Expenses

Pricing Insurance

1. Expected value of future costs
2. Provides for all costs of risk transfer
3. Provides for all costs of individual risk transfer
4. Reasonable rate estimates all future costs of risk transfer

SOURCE: CAS Statement of Ratemaking Principles (1988).

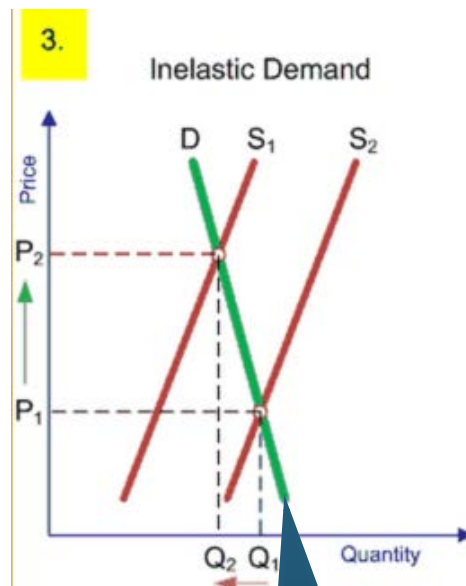
All of These Are Related to Projected Expenses

For Most Products, Supply and Demand Set Price—But Not In Insurance.

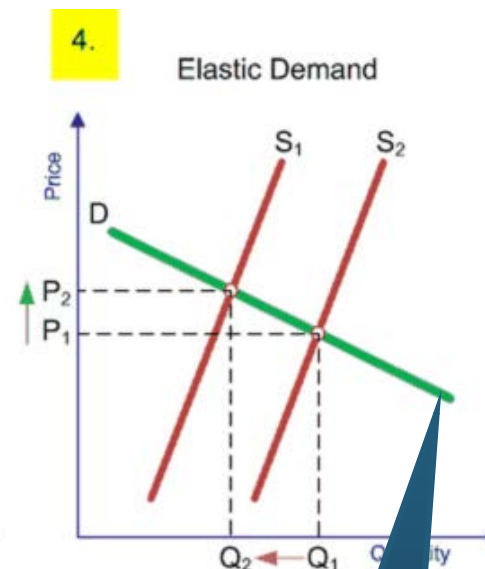
Predicting Supply and Demand

Elasticity of Demand

- Econ 101: How Much Will Sales Fall If Price Rises?
- Steep Demand Curve → Consumer Doesn't Care Much If Prices Rise
- Companies That Know the Slope Can Price Smarter



**Example:
Gasoline**



**Example:
Shell
Gasoline**

Now Computers Can Model Elasticity of Demand.

Enter the Optimizers (c. 2005-2010)



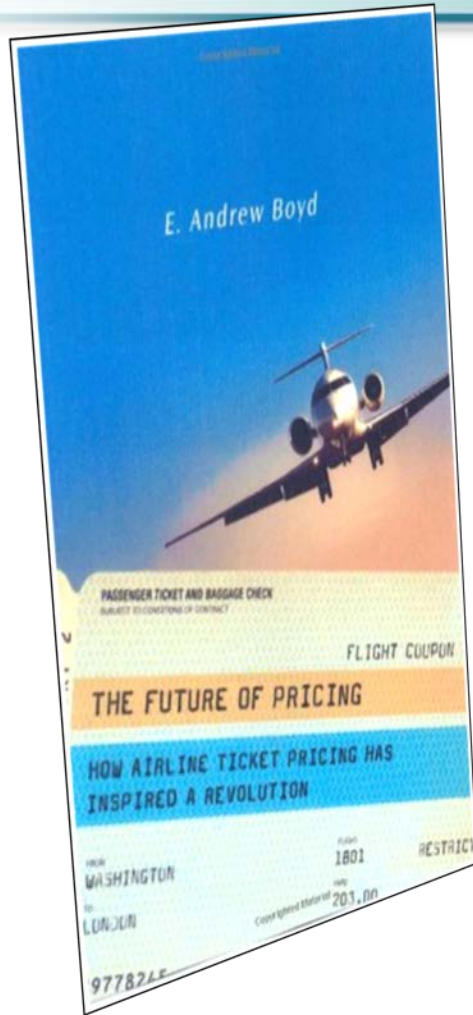
“...to provide the right price for every product to every customer segment through every channel and to update those prices over time ...”

-- Robert Phillips (2005)

“...ensuring the prices are not too low or too high in different transactions relative to guidelines lends itself perfectly to Six Sigma.”

-- Sodhi and Sodhi (2007)

Holden and Burton (2008) show “how to fully exploit the value your company offers customers. This is a proven plan for increasing sales without sacrificing profits.”



■ Computer-Driven Dynamic Pricing Sets Rates for:

- ◆ Hotels
- ◆ Airline Tickets
- ◆ Uber Rides

■ Prices Change

- ◆ Weekly
- ◆ Daily
- ◆ *Instantaneously*

Not Surprised Are You? We Are Used to Seeing Price Optimization in Other Products.

Have Insurers Always Optimized Prices?

Do Rates Adhere to Projected Loss?

Disposition

Disposition Date: 03/11/2015
 Effective Date (New): 05/01/2015
 Effective Date (Renewal): 05/01/2015
 Status: ~~Approved~~
 Comment:

Company Name:	Overall % Indicated Change:	Overall % Rate Impact:	Written Premium Change for this Program:	Number of Policy Holders Affected for this Program:	Written Premium for this Program:
	5.700%	2.600%	\$169,000	632	\$6,483,000
	17.400%	2.600%	\$898,000	3,649	\$34,492,000
	-3.800%	3.400%	\$1,859,000	15,942	\$54,331,000
	-6.300%	3.200%	\$170,000	1,071	\$5,284,000
	7.500%	2.700%	\$955,000	5,793	\$35,290,000

Overall Rate Information for Multiple Company Filings

Overall Percentage Rate Indicated For This Filing	4.500%
Overall Percentage Rate Impact For This Filing	3.000%
Effect of Rate Filing-Written Premium Change For This Program	\$4,051,000
Effect of Rate Filing - Number of Policyholders Affected	27,087

Companies Rarely Take the Indicated Rate

REGDACTED

Regulators Are Generally OK With That.

Sources: System for Electronic Rate and Form Filing (SERFF) via SNL Financial; Insurance Information Institute.

Is That OK Professionally? Does Current Practice Conform to Ratemaking Principles?

By the Insurer

- ◆ Young Drivers Undercharged – Don't Want to Lose the Parents (Class Plan)
- ◆ Implementation of New Class Plan – Minimize Rate Shock (Individual)
- ◆ Post-Merger Rate Stabilization Factor (Individual)

Insurers Have Been Adjusting Rates for Reasons Unrelated to Loss for Decades. Was That Wrong?

By Government

- ◆ Proposition 103 (20% Rate Rollback) - 1988
- ◆ Flood Insurance (18% Cap on Rate Increases) - 2014
- ◆ Limit/Ban on Age/Gender As Rating Variable (~Seven States) - Ongoing

■ All Adjustments Unrelated to Expected Loss (but Mandated).

But There Are Limits

Insurers Have. . .

- Infrequent (Annual) Rate Changes
- Traditionally Optimized in Tiny Adjustments
- No Coupons

Load Digital Coupon Savings to your Price Plus® club card with the ShopRite App

Double with Coupons Up to 30¢

SALE STARTS

From HOME

ShopRite Order your groceries online at shoprite.com

Shop Any Way... In-Store Online & Mobile Pick Up/Delivery

ALL WEEK PRICE BREAK On Sale thru Sat. 6/6

Sweet Peaches Product of USA **WOW! FINAL COST .97**

Original Vanilla **1.41**

Talent! Gelato **2.88**

Lady's Italian Ice **.99**

Popsicle Firecracker **.99**

Blue Bunny Sandwiches **1.99**

BUY MORE...SAVE MORE!

Bounty Large Towels 12-Pack **11.99**

Charmin Double Roll Bath Tissue 24-Pack **11.99**

Tide Laundry Detergent **16.99**

Marcal Bath Tissue 20-Pack **8.88**

General Mills Cereal **2.49**

Nature Valley Granola Bars **2.49**

Kellogg's Cereal **2.49**

Green Mountain K-Cups **6.99**

Store Made Pudding Cake **1.99**

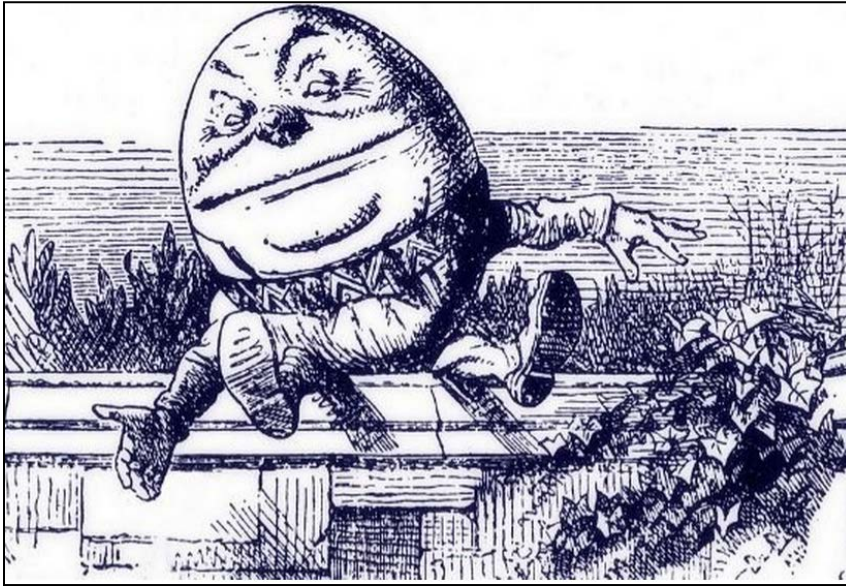
Ronzoni Pasta **.88**

ShopRite Vegetables **.99**

ShopRite Brand **.88**

INSURANCE

INSURANCE

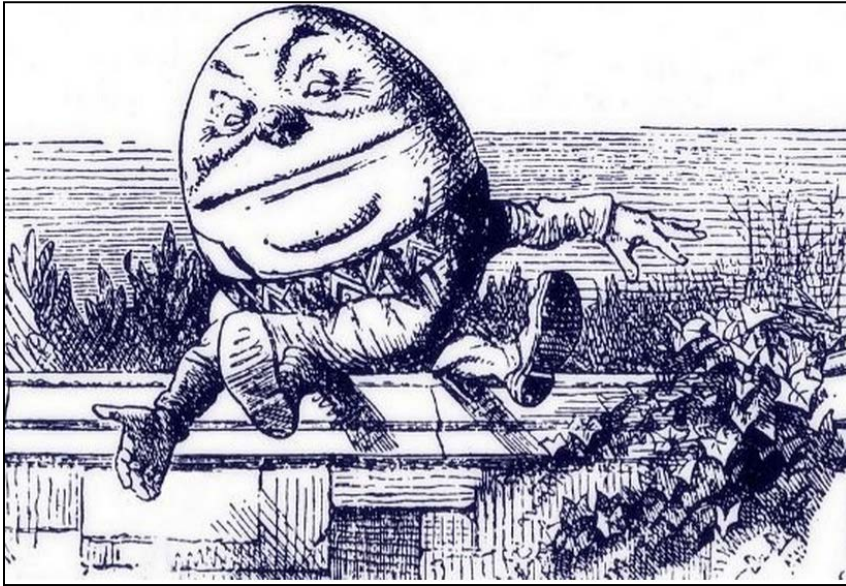


“When I use a word,” Humpty Dumpty said in rather a scornful tone, “it means just what I choose it to mean — neither more nor less.”

“The question is,” said Alice, “whether you can make words mean so many different things.”

“The question is,” said Humpty Dumpty, “which is to be master — that’s all.”

- 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.”



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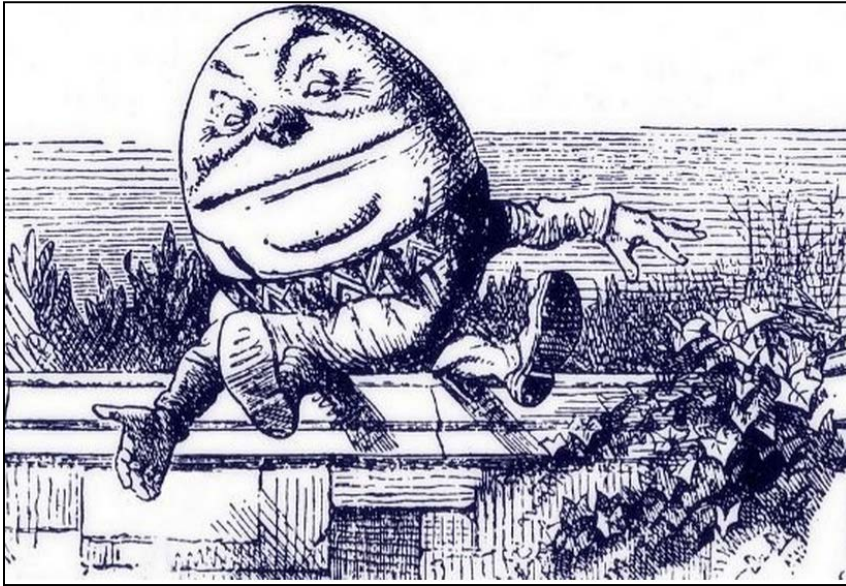
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- Earnix (P.O. Vendor):
 - ◆ “a systematic and statistical way to help an insurer determine a rate plan that better fits the competitive environment, within actuarial and regulatory standards.”

Price Optimization Defined

My
Emphasis.

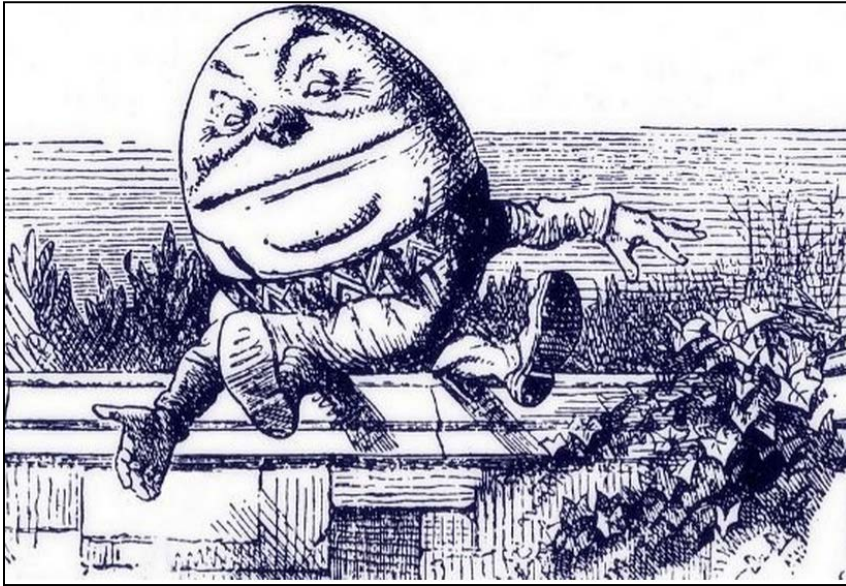


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- Maryland - “varying rates based on **factors other than risk of loss**, including, but not limited to:
 - “a) The likelihood that a policyholder will **engage in activities that result in policy turnover**; and
 - “b) The willingness of a policyholder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

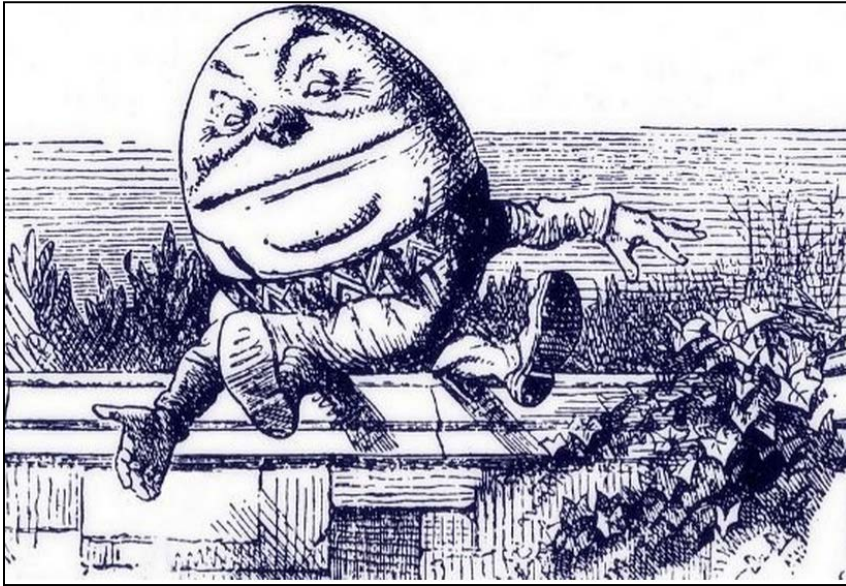


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- New York – “the practice of varying rates based on **factors other than those directly related to risk of loss**, for example, setting rates or factors based on an insured’s likelihood to renew a policy or on an individual’s or class of individuals’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

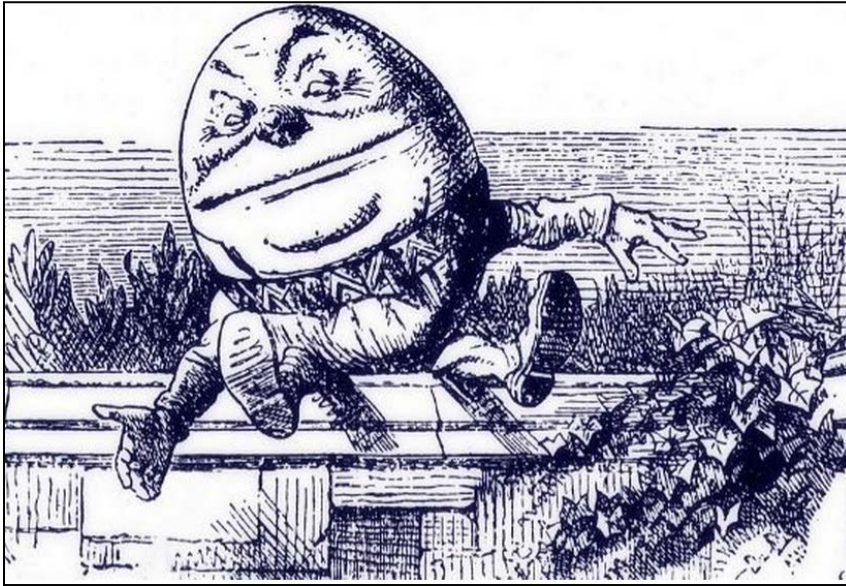


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- Ohio—“While price optimization has no absolute definition, it generally refers to an insurer’s practice of **varying premiums based upon factors that are unrelated to risk of loss in order to charge each insured the highest price that the market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

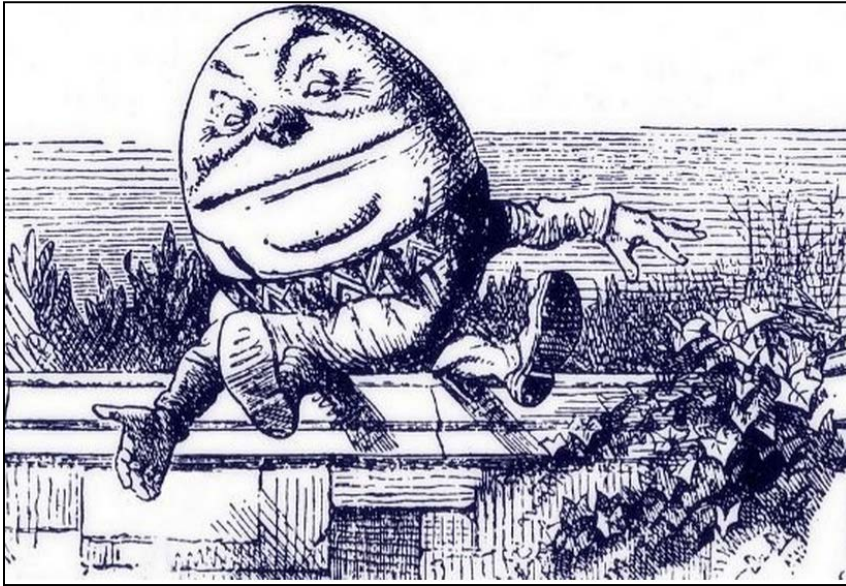


- California—“any method of taking into account an individual’s or class’s **willingness to pay a higher premium** relative to other individuals or classes.”

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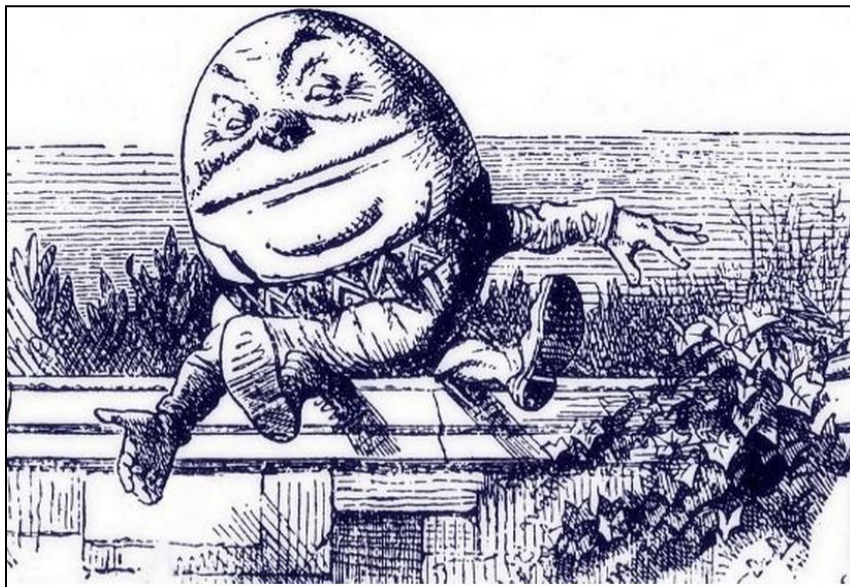


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- Florida—“a process for modifying the insurance premium that would otherwise be charged to an insured or class of insureds in order to **maximize insurer retention, profitability, written premium, market share**, or any combination of these while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



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- 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.”

Proponents

- It's Not, Except Software Replaces Subjective Process
 - ◆ May Make Rates More Stable
- Allowed Under Current Actuarial Standards of Practice [Statement of Principles?]

Opponents

- Gouges Customers, Particularly Those Who Shop Less
 - ◆ Renewals and the Poor
- Conflicts With State Rating Laws
 - ◆ 'Not to Be Excessive, Inadequate, Unfairly Discriminatory'

Each Side Has Counterarguments, of Course.

Pro

- If You Have Two Identical Risks Except One Is More Likely to Renew, Should You Charge Them Different Prices?

Con

- How Can You Ban a Common Practice Just Because a Computer Does It Better?

Does Statement of Principles Allow Price Optimization?

- The principles in this Statement are **limited to that portion of the ratemaking process involving the estimation of costs** associated with the transfer of risk.
- “Ratemaking should provide for the costs of an individual risk transfer **so that equity among insureds is maintained.**” (Reasonable, not excessive, not inadequate, not unfairly discriminatory)
- Justification Via Considerations?
 - ◆ Mix of Business – “...distributional changes in deductibles, coverage limitations or type of risks **that may affect the frequency or severity of claims.**”

What I'm
Looking
At. (You
Might
Disagree.)

■ Justification Via Considerations?

- ◆ Operational Changes – “Changes in the **underwriting process**, claim handling, case reserving and marketing practices that affect the **continuity of the experience**.”
- ◆ Other Influences – “The impact of external influences **on the expected future experience** should be considered. . .”
(seems to focus on residual markets, etc.)
- ◆ Actuarial Judgment – “...may be applied throughout the ratemaking process...”

Foreshadowing
Alert.

■ § IV. Conclusion

- ◆ “The actuary, by applying the ratemaking principles in the Statement, will derive an estimation of the future costs associated with the transfer of risk. **Other business considerations are also a part of ratemaking.**” [U/W, Marketing, Law, Claims, Etc.]

Reality
Alert:
It's A
Static
Model.

Of Course, These Are the Old Principles . . .

The Triple-I Players Present

Do Actuaries Make Rates?



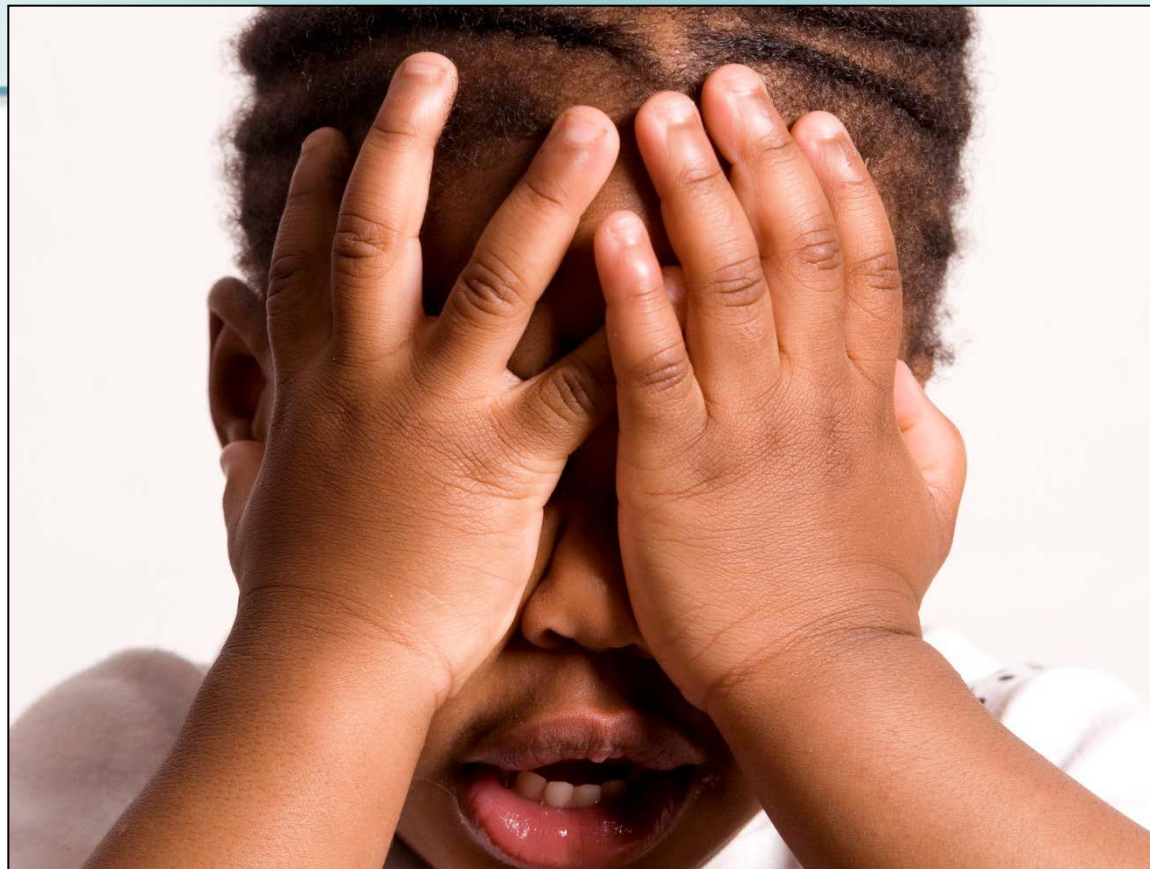
Actuary

“My Analysis Shows We Need to Raise Rates 5%.”



Underwriter

“We Might As Well Close Up Shop Right Now.”



Agent

“You’re Killing Me”



Senior Management

“I Think Maybe You
Should Sharpen Your
Pencil.”

**Repeat As Needed Until
The End**

**Moral: Ratemaking Is a
Collaboration**

Professionalism Break No. 2

- Statement of Ratemaking Principles Is Changing
 - ◆ Distinguish Between Principles (Worldwide) and Practices (Country-specific)
 - ◆ Separate Estimation of Rate From Setting of Rate
- ASB Developing U.S. Standard of Practice



CAS
(Constitution)
Vs. ASB (Local
Law)

Images: Ten Commandments photo By Ji-Elle (Own work) [GFDL (<http://www.gnu.org/copyleft/fdl.html>) or CC BY-SA 3.0 (<http://creativecommons.org/licenses/by-sa/3.0>)], via Wikimedia Commons; U.S. Code photo By Tony Webster (Own work) [CC BY-SA 3.0 (<http://creativecommons.org/licenses/by-sa/3.0>)], via Wikimedia Commons

SOURCE: Notes from "The Standards and Principles: 'They are a Changin,'" 2015 Ratemaking and Product Management Seminar.

CURRENT: *Ratemaking is the process of establishing rates used in insurance or other risk transfer mechanisms.*

PROPOSED: *Ratemaking is the process of establishing future costs associated with the transfer of risk in insurance or other risk transfer mechanisms.*

Distinguishes
Between
Technical
Price, “Street
Price”

Current Principles

- 4 Sections – Definitions, Principles, Considerations, Conclusion

Proposed Principles

- 3 Sections (Considerations Moved to Standards of Practice)

CURRENT/PROPOSED: *The actuary, by applying informed actuarial judgment and 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 insurance pricing.*

Replaces
'Ratemaking' With
'Insurance Pricing'

Some are dismayed

"...dismantling the cost-based standard as the bedrock of the actuarial profession . . .

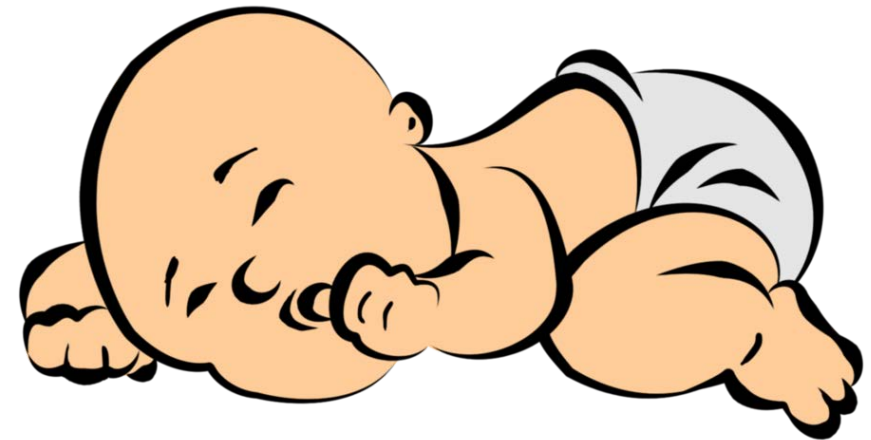
"It is shocking to me as a Fellow of the CAS that the Society would propose a set of principles that [implies actuaries] not only have no impact on the prices that policyholders will pay, but acts to remove the actuary from the central role she has in ratemaking today."

- J. Robert Hunter, Consumer Federation of America

But For Reserving Actuaries, The Distinction May Sound Familiar.



Statement of
Principles
Regarding
Property and
Casualty
*Loss and Loss
Adjustment
Expense
Reserves*
1988-2014



Statement of Principles Regarding
Property and Casualty *Unpaid Claims
Estimates*
Born May 6, 2015

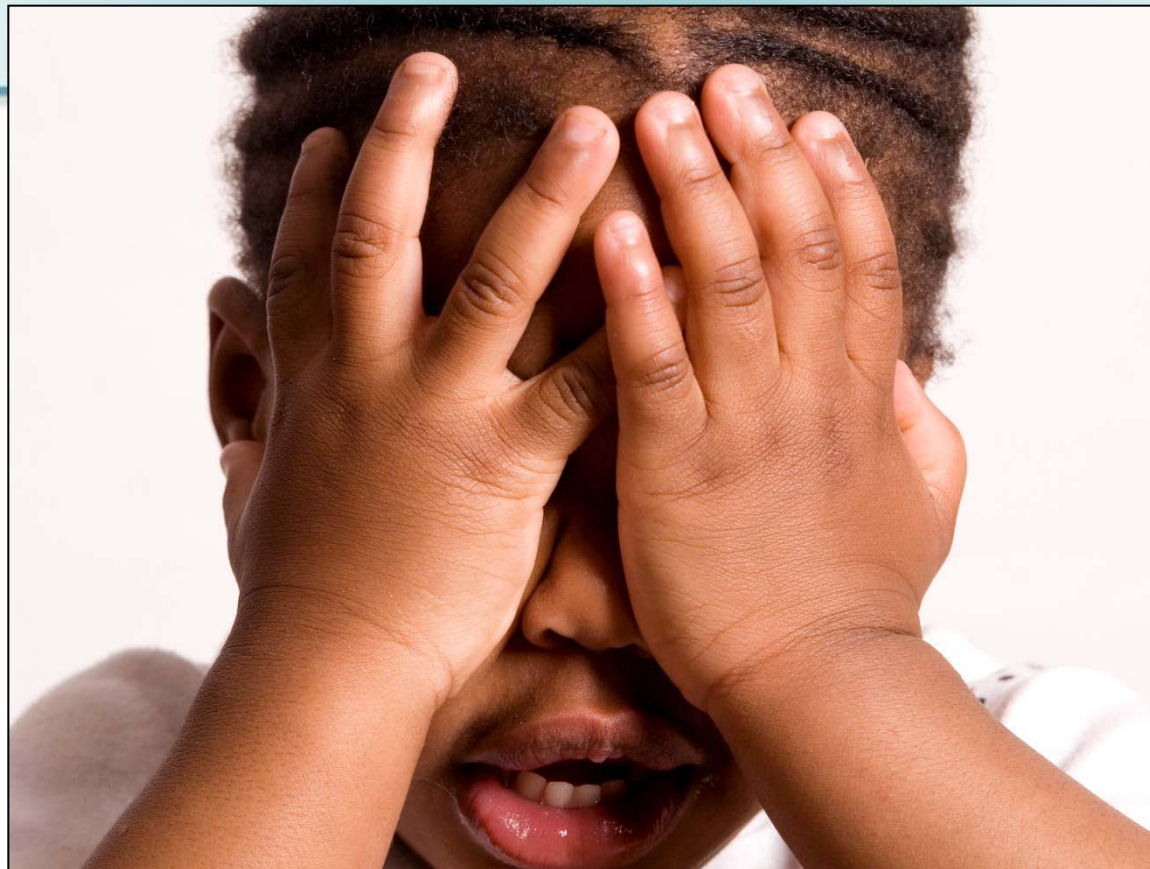
The Triple-I Players Present

Do Actuaries Set Reserves?



Actuary

“My Analysis Shows We Need to Raise Reserves 5%.”



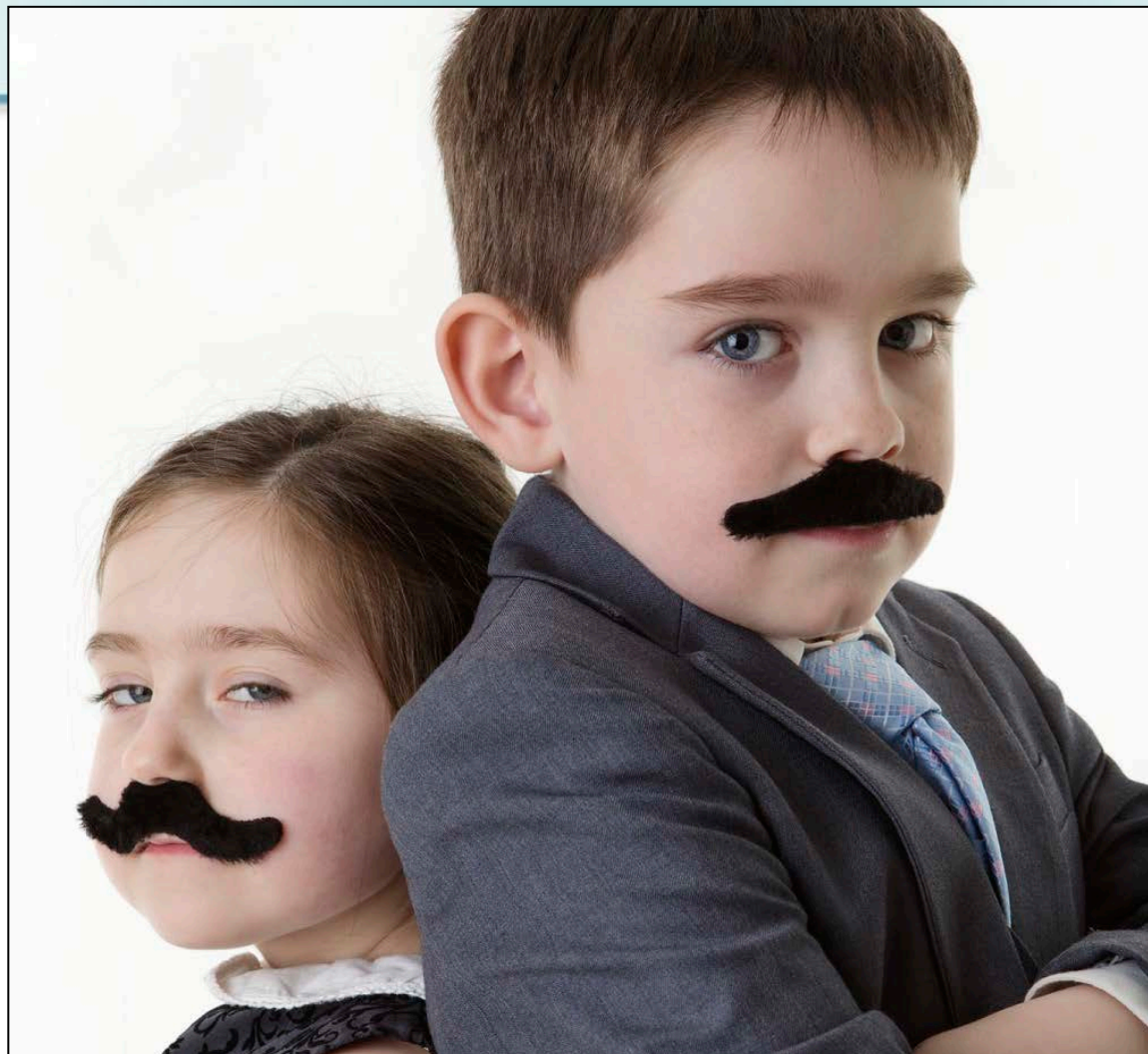
CFO

“There Goes My Bonus.”



Underwriter

“There Goes My Bonus – And I’ll Be Fired.”



Senior Management

“No One Wants to Lose
Their Bonus or Their Job.
Do You?”

**Repeat As Needed Until . . .
The End**

**Moral: Loss Reserving Is a
Collaboration**

Old Principles

- 4 Sections – Definitions, Principles, Considerations, Conclusion

New Principles

- 3 Sections (Considerations Moved to Standards of Practice)

Implicit Is the
Difference
Between Estimate
and Booked

OLD: *A loss reserve is a provision for its related liability.*

NEW: *Unpaid Claims Estimate: An actuary's estimate of the unpaid amount required to make the future loss and/or loss adjustment expense payments related to a defined group of claims*

CAS on Unpaid Claims Estimates

- “The principal objective of revising the original Principles was to update them and to revise them where necessary to contain principles only, not standards of practice.”
- “This newly adopted Statement is not intended to provide prescriptive practice guidance to actuaries. Such practice guidance for actuaries has been developed in the U.S., for example, by the Actuarial Standards Board (U.S.) in the form of Actuarial Standards of Practice.”

■ **The Same Sort of Reasoning Applies to Ratemaking.**

■ Ratemaking Principles

- ◆ Current <http://casact.org/professionalism/standards/princip/sppcrate.pdf>
- ◆ Proposed http://www.casact.org/professionalism/SoP-Ratemaking-Discussion-Draft_October2014.pdf

■ Ratemaking Standards (Exposure Draft)

http://www.actuarialstandardsboard.org/wp-content/uploads/2014/12/Ratemaking_expsoure_draft_sept2014.pdf

■ Reserve Principles

- ◆ Old <http://casact.org/professionalism/standards/princip/sppcloss.pdf>
- ◆ New http://www.casact.org/professionalism/standards/princip/SOP-Regarding-Property-and-Casualty-Unpaid-Claims-Estimates_Final%204-22-2015.pdf

- Price Optimization Is A Controversial Activity.
 - ◆ Much Depends on How Term Is Defined.

- Ratemaking Principles Are Changing. Reserving Principles Changed.
 - ◆ Removing Nation-Specific Guidance.
 - ◆ Bedrock CAS Principles Apply Everywhere
 - ◆ Practice Guidelines Tend to Be Nation-Specific (ASB in US)

- Don't Break the Law
If the CAS Principle Changes, It's Still the Law in Many (Most?) States.

Insurance Information Institute Online:

www.iii.org

***Thank you for your time
and your attention!***

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