#### Predicting Consumer Choice in Medical Plan Elections Andrew Mackenzie, ASA, MAAA Santa Barbara Actuaries, Inc.

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# Why Plan Choice Matters

#### Costs

- How individuals select their medical plan directly impacts the cost of that plan
- Depending on the actuarial methodology used, inaccurate enrollment assumptions can lead to large errors in pricing/underwriting
- Satisfaction and Health
  - I would hypothesize that individuals who choose a plan that fits their needs and preferences will be more satisfied with their benefit offering and probably be healthier than if they had selected a plan that poorly fit their needs and preferences

#### Market Trends

**Medical Inflation** 

Changing Legislation

**Account Based Health Plans** 

#### Exchanges

Narrow Networks

#### **Increased Choice**

Complex

## **Discussion Topics**



# My Background

- Predicting Claims
  - ARC
  - Employer health care consulting
- Understanding/Predicting Behavior
  - Consumer study commissioned by Towers Watson
  - Models predicting choice and utility
- Guiding Employees to the Optimal Fit
  - Pilot underway

#### Health Plan Literacy



- Health literacy: The degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions (Ratzan and Parker, 2000)
- Financial Literacy: the ability to understand basic principles of business and finance (Cambridge Dictionary)
- Health Plan Literacy: the degree to which one understands, selects, and applies their health plan

#### Sample Case -Worst Case

#### James:

Scenario: 40-year-old, married poorly-managed type 2 diabetic male with 2 teenagers on his plan. Both James and his wife have high cholesterol and blood pressure



# Sample Case – Typical

- Fortunately, the worst-case scenario is not the most common, but here are some typical sub-optimal outcomes arising from low health plan literacy:
  - HSA funding is below ideal levels
  - Individuals choose richer plans than they need/desire
  - The ER is over-utilized
  - Plan choice is driven by name, perception, culture, or 1 or 2 design features
  - The rate of generic Rx substitution is low

### Statistics/Research

- Lack of plan literacy: My research at Towers Watson found that roughly 2/3rds of individuals could not answer 2 basic questions about health plan design. The study also found a strong correlation between levels of health plan literacy and simulated plan choices and preferences
- Biases in election choices: Other research has found that most individuals do not do well at interpreting plan design and forecasting cost. One paper even found that individuals have a tendency to choose a plan that will end up costing more in every situation! (Bhargava, Lowenstein and Sydnor)
- Outcomes impact: Some research has concluded that higher health plan literacy leads to better health outcomes (Sheridan, et al.)

## Conclusion

- Health plan designs, like the US healthcare system in general, are quite complex
- The lack of health plan literacy in the US is highly prevalent and an issue worth addressing
- Low health plan literacy can lead to poor choices, poor outcomes, and high costs
- I am not advocating choice reduction but rather better/more timely education

#### Plan Choice Tendencies

## Sample Case

- How do you choose a health plan?
- If you're like most, you think about a few key things:
  - What plan is everyone else choosing/saying is good?
  - Which plan sounds the best?
  - Price (contributions/premiums)
  - Can I see my doctor?
  - How much will it cost to see my doctor? (PCP copay)
  - What's the deductible?
  - How much will it cost to fill my prescriptions? (Rx copay)

## Sample Case - Continued

- A few things to note about the common responses:
  - People exhibit heuristics and biases
  - Focus is on several key design features (deductible and copays)
  - Decisions are influenced by peers and naming conventions
- Common elements of behavioral economics:
  - Anchoring
  - Loss aversion
  - Simplification

### **Needs and Preferences**

- Why offer choice in the 1<sup>st</sup> place?
  - Needs and preferences vary by individual/family
  - Choice (up to some point) increases utility via cost savings, network options, and/or risk reduction

#### Some High-Level Research Findings

- Many consumers are overly sensitive to copays and deductibles
- In single households, women exhibit a tendency to choose richer plans. This is nullified in joint households
- As one would expect, need is strongly correlated with richer plan selection (poor health, older age)
- Individuals with low health plan literacy demonstrate a tendency to choose lean plans – probably because they are overly focused on the premium cost of these plans
- People who are resistant to adopt narrow networks or averse to trying new medical technology services (such as telemedicine) tend to choose rich plans
- Income exhibits a bit of a "U" distribution where high income households and low income household tend to choose rich plans

### Conclusions

- People have different needs and preferences and can benefit from choice
- These choices tend to follow demographic, preference, and need-related patterns. They are not, nor should they necessarily be, costoptimal
- More choice produces more variance and unknowns and hence opens up the door for predictive modeling to help maximize cost projections and consumer utility

#### Applications

## Simple Pricing Example

- Increase pricing accuracy by predicting plan choice
- Self-insured budget setting

- Assume 3 plan options: new HDHP (70% AV), PPO 1 (85% AV), PPO 2 (95% AV)
- Total paid claims last year were \$9M for PPO 1 and PPO 2 for 1,000 employees (500 enrolled in each plan)
- For simplicity, assume all else equal
  - Combined AV is 90%, meaning \$10M in aggregate claims (including OOP) last year
  - Pricing team makes an assumption of 40% adoption of the HDHP per "actuarial judgement." Projected enrollment is 400 HDHP, 300 PPO 1, 300 PPO 2. New AV is 82%. \$10M \* 82% = projected cost of \$8.2M
  - Let's say actual enrollment is 10% in the HDHP (100 HDHP, 450 PPO 1, 450 PPO 2). Actual combined AV is 88% and claims are \$8.8M
  - Hence, the inaccurate enrollment assumption, all else equal, led to a pricing error of \$600,000 or 7.3% of initial projection

## Sample Pricing Model

ID	Age	Gender	Tier	Salary	PY Plan Election	Prob PPO1	Prob PPO2	Prob HSA
1	53	Μ	EE+S	\$79k	PPO1	70%	20%	10%
2	48	F	EE+C	\$84k	PPO2	30%	60%	10%
3	29	F	EE	\$52k	PPO2	20%	40%	40%
4	61	F	EE	\$135k	PPO1	80%	15%	5%
5	42	Μ	EE+F	\$57k	PPO2	35%	60%	5%
6	38	F	EE+S	\$48k	PPO1	50%	35%	15%
Total						45%	45%	10%

## **Decision Support**

- If we can understand/predict consumer choice, we can increase the effectiveness of decision support through:
  - Plan Design: we can tailor plan designs to influence selection
  - Buying Experience: recommendation engines and dynamic education can be customized more to the individual
  - Communications: can be customized more to the individual or population cohorts to better educate, inform, and impact behavior

# **Optimizing Employee Value**

- Finally, if we understand consumer preferences, we can understand consumer utility
- And conduct sensitivity/utility modeling in addition to cost modeling
  - How will employees in the leanest plan feel about a \$200 deductible increase compared to a 10% contribution increase?
  - If plan value needs to be lowered by 5% due to cost constraints, how can the design be changed to hurt employees the least?
  - If we want to reduce enrollment in the richest plan or increase enrollment in the leanest plan, how do we incent that behavior?

# Conclusion

- Pricing
- Decision Support
  - Design
  - The Buying Experience
  - Communications
- Optimizing employee value

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