Evaluating Consumer Preferences for Medicare Part D Using Conjoint Analysis
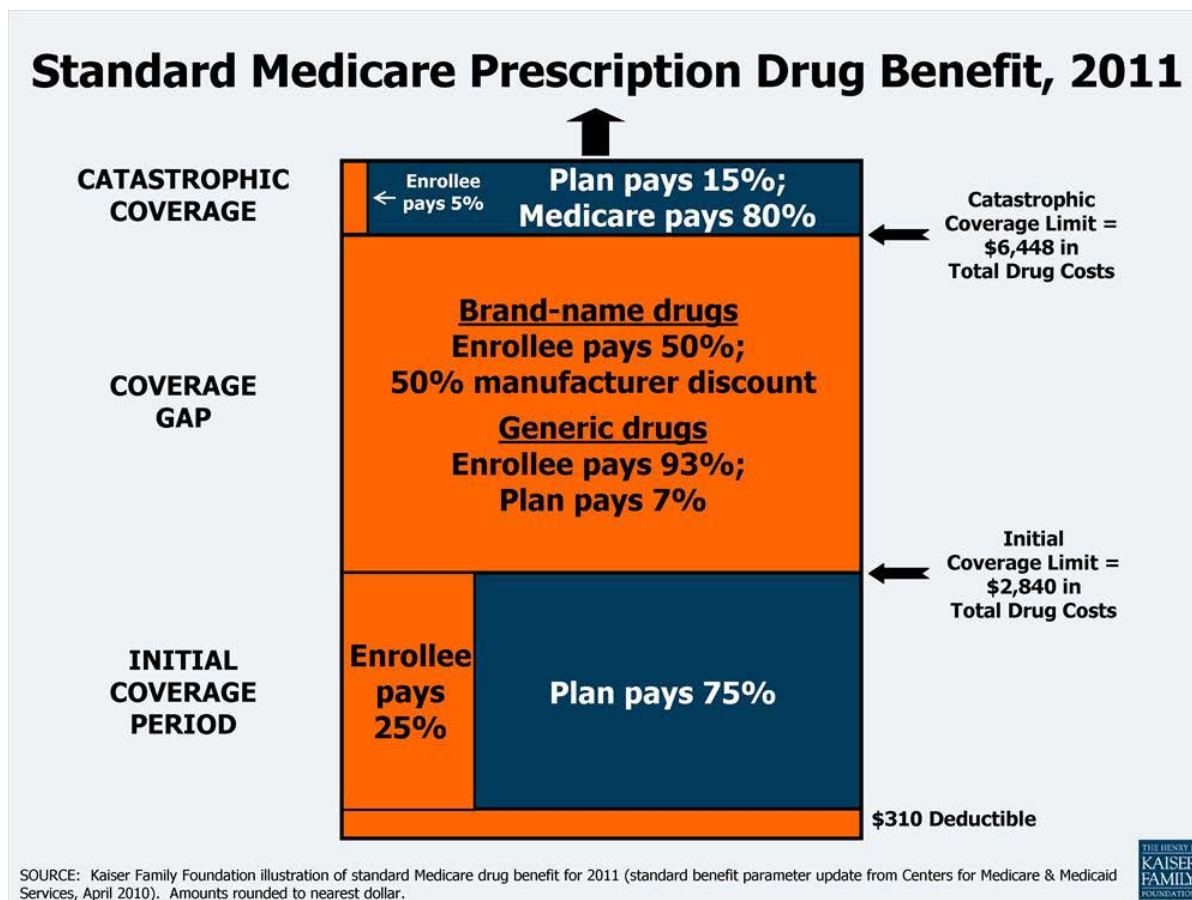
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Background on Medicare Part D

- Plans must offer the standard benefit at a minimum
- Most plans offer a different structure that may be actuarially equivalent
- So much room to compete on price and coverage but what is optimal mix?

Standard Medicare Prescription Drug Benefit, 2011

CATASTROPHIC COVERAGE — Enrollee pays 5%; Plan pays 15%; Medicare pays 80% — Catastrophic Coverage Limit = $6,448 in Total Drug Costs

COVERAGE GAP
Brand-name drugs
Enrollee pays 50%;
50% manufacturer discount
Generic drugs
Enrollee pays 93%;
Plan pays 7%

Initial Coverage Limit = $2,840 in Total Drug Costs

INITIAL COVERAGE PERIOD — Enrollee pays 25% — Plan pays 75%

$310 Deductible

SOURCE: Kaiser Family Foundation illustration of standard Medicare drug benefit for 2011 (standard benefit parameter update from Centers for Medicare & Medicaid Services, April 2010). Amounts rounded to nearest dollar.

Important Questions in a Managed Competition Market

- Are there ways to ascertain the relative utility that seniors place on different components of the plan?

- Are there ways to prospectively find out what seniors would be willing to pay for plans with a certain type of structure?

- Are there ways to estimate how successful a hypothetical plan would be if introduced into the current market?

What We Know about Consumer Choice in the General Health Insurance Market

- Two types of variables
  - Primary variables
    - Price- Premiums, copayments, deductibles, etc.
    - Quality- Choice of provider, coverage breadth, plan convenience
  - Secondary variables- Demographic characteristics, health status, economic status, other variables
- Although consumers may not be able to specifically define specific attributes, they tend to pick plans with higher "quality" at given prices

Limitations of Previous Studies

- Insufficient evidence on how primary variables interact with secondary variables
- Most only look at a few plan features at a time so do not look at how attributes of total plan interact
- Ask open ended questions
- These limitations are bypassed through conjoint analysis

Conjoint Analysis Overview

- Proposes that consumers choose products or services on the basis of the aggregate utility of the features (attributes) making up the product

- Attribute
  - Car color, car price, mileage per gallon

- Level
  - Black, white, red
  - $8,000 $12,000 $16,000
  - 20 mpg   25 mpg   30 mpg

Past Research on Consumer Choice in Prescription Drug Plans

- **Frakt and Pizer, 2009**
  - Found premium elasticity of -1.45
  - Factors positively associated with enrollment in plan were lower premiums, lower minimum copayments, and coverage for brand name medications in doughnut hole
  - Concluded that brand loyalty not established and elasticity higher as do not have to break relationship with physician
- Heiss et al., 2007
  - Seniors would be willing to pay approximately $33 for generic doughnut hole coverage
  - Seniors would be willing to $14 monthly for no deductible plans

Past Research on Consumer Choice in Prescription Drug Plans

- Abaluck and Gruber, 2009
  - Indicated that seniors valued the premium approximately 5 times more than other components of out of pocket cost
  - Seniors would have to be paid approximately $84 to go from plans which had the lowest degree of cost sharing to those with the highest degree of cost sharing
  - Seniors would be willing to pay approximately $50 for generic doughnut hole coverage
- Holdford and Carroll, 2002
  - Used conjoint analysis
  - Attributes: co-payment levels, choice of pharmacy, and presence of formulary
  - Performed in general population
- Wellman and Vidican, 2008
  - Used conjoint analysis
  - Attributes: premium, co-payment, pharmacy access, formulary, level of pharmacist interaction
  - Did not survey Medicare population

Survey Instrument

Please select the plan you'd be most likely to purchase. For each feature, select your preferred level.

Feature	Select Feature	Cost for Feature
doughnut hole coverage	◯ No generics covered in doughnut hole ◯ Few generics covered in doughnut hole (+ $10) ◯ Some generics covered in doughnut hole (+ $15) ◯ All generics covered in doughnut hole (+ $20)	$
deductible	◯ $0 deductible (+ $16) ◯ $150 deductible (+ $8) ◯ $310 deductible	$
	Total	$

Survey Instrument

Here are a few plans you might like. For each one, indicate whether it is a possibility or not.

(1 of 8)

premium	$48	$53	$38	$44
brand copay	$45 or $95 for brands	$25 or $40 for brands	$35 or $60 for brands	25% for brands
generic copay	$0 for generics	$7 for generics	25% for generics	$7 or 50% for generics
doughnut hole coverage	Few generics covered in doughnut hole	Some generics covered in doughnut hole	No generics covered in doughnut hole	All generics covered in doughnut hole
formulary	some drugs are covered and there are some restrictions on covered drugs	some drugs are covered but there are no restrictions on covered drugs	all drugs covered and no restrictions on covered drugs	all drugs covered but some restrictions on covered drugs
pharmacy access	you can use some pharmacies including your current one	you can use some pharmacies but not including your current one	you can use all pharmacies	you must use mail order for full benefits
deductible	$310 deductible	$0 deductible	$150 deductible	$150 deductible
mtm eligibility	2 diseases and 3 drugs required	4 diseases and 9 drugs required	3 diseases and 6 drugs required	2 diseases and 6 drugs required
	○ A possibility ○ Won't work for me	○ A possibility ○ Won't work for me	○ A possibility ○ Won't work for me	○ A possibility ○ Won't work for me

Survey Instrument

We don't want to jump to conclusions, but we've noticed that you've selected plans with certain characteristics shown below. If any of these is an **absolute requirement**, it would be helpful to know. If so, please check the **one most important** feature, so we can just focus on plans that meet your needs.

- generic copay - At most: 25% for generics
- formulary - At least: some drugs are covered but there are no restrictions on covered drugs
- pharmacy access - At least: you can use some pharmacies but not including your current one
- deductible - $0 deductible
- mtm eligibility - At most: 3 diseases and 6 drugs required
- doughnut hole coverage - No generics covered in doughnut hole
- brand copay - At most: $35 or $60 for brands

- None of these is an absolute requirement.

Sample Population

- Seniors at least 65 years old attending senior centers or residing in apartment homes in Memphis, TN or the surrounding metropolitan area

- Had to be able to understand English and have no self limiting cognitive conditions

- Investigator administered survey to one senior at a time after explaining informed consent and purpose of study

Data Analysis

- Part Worth Values- Sawtooth Software CBC/HB Hierarchial Bayes Estimation
- Lower Model -$p_k = \exp(x_k' \beta_i) / \sum \exp(x_j' \beta_i)$
- Upper Model - $B_i \sim$ Normal (α, D)
  - B_i- Individual Part Worths
  - X_j – The jth alternative in a choice set
  - X_k – The utility of the kth concept in a choice task
  - P_k – The probability of an individual choosing a particular concept
  - α – the mean part worths of individuals across the sample
  - D- the variances and covariances of individual part worths across the sample
- Gibbs Sampling – Iterative process where α, D and B_i estimated conditional upon each other
  - 20,000 iterations used for convergence and 20,000 used for estimation

Data Analysis

- Importance scores
- Highest part worth for each attribute- lowest part worth for attribute
- S= $\underline{\text{Range } Ai}$

  $\Sigma_{i=1}$ Range Ai

- <u>Attribute   Part Worth</u>

  Strawberry   2.5 (2.5 − 1.8) = 0.7   0.7/(3.9 + 0.7)= 15%

  Chocolate   1.8

  25 cents   5.3   (5.3 − 1.4) = 3.9   3.9/(3.9 + 0.7) = 85%

  35 cents   3.2

  50 cents   1.4

Table 1: Demographics of Sample

Variables (N=497)	Number	%
Gender		
Male	138	27.8
Female	359	72.2
Race		
White	144	29.0
Black	353	71.0
Education		
Less than High School	144	29.0
High School Graduate	154	31.0
Some College	129	26.0
Bachelor's or Higher	70	14.1
Income		
$0-$10,000	113	22.7
$10,001-$15,000	153	30.8
$15,001-$20,000	87	17.5
$20,001-$30,000	78	15.7
$30,001-$40,000	28	5.6
$40,001-$50,000	14	2.8
More than $50,000	24	4.8
How Prescription Drug Insurance Selected		
Primarily on Own	210	42.3
Family Members	50	10.1
Physician	11	2.2
Pharmacist	0	0
No Drug Plan	6	1.2
Other Source	219	44.1

Mean age (SD) = 73.93 (7.21)

Table 2: Medical expenditure variables

Variable (N=497)	Minimum	Maximum	Mean	SD
Comorbidities	0	12	1.97	1.82
Number of prescription medications	0	20	5.15	3.64
Monthly cost of medications (dollars)	0	900	38.61	69.74

Table 3: Part worth values with breakpoints for premium

Attributes	Part Worth	SE	Lower 95% CI	Upper 95% CI
Premium				
$21	2.83	0.36	1.899	2.342
$30	1.99	0.25	0.305	0.750
$38	-0.84	0.25	0.628	1.103
$46	-3.40	0.24	-3.94	-3.073
$82	-29.49	0.65		
Brand Copayment				
$25 or $40	1.76	0.04	1.899	2.342
25%	0.53	0.04	0.305	0.750
$35 or $60	0.75	0.04	0.628	1.103
$45 or $95	-3.04	0.08	-3.94	-3.073
Generic Copayment				
$0	1.26	0.04	1.311	1.785
$7	-0.11	0.02	-0.313	0.127
25%	-0.73	0.03	-1.130	-0.625
$7 or 50%	-0.41	0.02	-0.835	-0.401
Doughnut Hole Coverage				
None	-0.06	0.04	-2.343	-1.296
Few Generics Covered	-0.35	0.07	-2.925	-1.285
Some Generics Covered	0.00	0.03	-0.354	0.184
All Generics Covered	0.41	0.06	3.397	5.020
Formulary Coverage				
All Drugs Covered No Restrictions	3.73	0.09	4.465	5.391
All Drugs Covered Some Restrictions	3.09	0.09	3.661	4.568
Some Drugs Covered No Restrictions	-3.06	0.09	-2.697	-1.600
Some Drugs Covered Some Restrictions	-3.75	0.09	-7.637	-6.247
Pharmacy Access				
All Pharmacies Available	2.33	0.06	2.625	3.385
Some Pharmacies Available Including Current	2.18	0.07	2.490	3.248
Some Pharmacies Available Not Including Current	-3.11	0.12	-4.597	-3.359
Mail Order Used for Best Benefits	-1.39	0.08	-2.466	-1.465
Deductible				
$0	3.69	0.10	4.724	5.646
$150	-0.02	0.03	-0.211	0.251
$310	-3.67	0.09	-5.681	-4.747
None	-9.300	0.43	-10.747	-7.397

Notes: SE indicates standard error and CI indicates confidence interval

Table 4: Marginal willingness to pay by selected demographic characteristics

Attributes	Total	Males	Females	Blacks	Whites
Premium	-4.71	-4.80	-4.67	-4.93*	-4.19
Brand Copayment					
$25 or $40	$4	$3	$3	$3	$6
25%	Reference	Reference	Reference	Reference	Reference
$35 or $60	$1	$1	$1	-$1	$2
$45 or $95	-$7	-$6	-$8	-$8	-$6
Generic Copayment					
$0	$5	$4	$5	$4	$4
$7	$2	$2	$2	$1	$2
25%	Reference	Reference	Reference	Reference	Reference
$7 or 50%	$1	-$1	$0	$1	$0
Doughnut Hole Coverage					
None	Reference	Reference	Reference	Reference	Reference
Some Generics Covered	$0	$2	$1	$0	$4
All Generics Covered	$3	$3	$3	$1	$7
Formulary Coverage					
All Covered No Restrictions	$2	$3	$2	$1	$1
All Covered Some Restrictions	Reference	Reference	Reference	Reference	Reference
Some Covered No Restrictions	-$16	-$15	-$17	-$15	-$23
Some Covered Some Restrictions	-$18	-$17	-$19	-$16	-$27
Pharmacy Access					
All Pharmacies Available	$0	$1	$0	$0	$1
Some Pharmacies Available Including Current	Reference	Reference	Reference	Reference	Reference
Some Pharmacies Available Not Including Current	-$14	-$12	-$14	-$12	-$17
Mail Order Used for Best Benefits	-$9	-$7	-$10	-$9	-$9
Deductible					
$0	$10	$7	$10	$9	-$9
$150	Reference	Reference	Reference	Reference	Reference
$310	-$10	-$11	-$10	-$10	-$11

Notes: * indicates significant differences in sensitivity to premiums at P=0.05 level following bootstrapping analysis. Males compared to females and blacks to whites.

Table 5: Marginal willingness to pay by income

Attributes	Low Income	Middle Income	High Income
Premium	-5.11*	-4.35*	-3.34
Brand Copayment			
$25 or $40	$3	$4	$13
25%	Reference	Reference	Reference
$35 or $60	$0	$3	$3
$45 or $95	-$8	-$7	-$3
Generic Copayment			
$0	$4	$5	$7
$7	$1	$2	$6
25%	Reference	Reference	Reference
$7 or 50%	$1	$1	-$2
Doughnut Hole Coverage			
None	Reference	Reference	Reference
Some Generics Covered	$0	$3	$5
All Generics Covered	$0	$5	$12
Formulary Coverage			
All Covered No Restrictions	$1	$2	$4
All Covered Some Restrictions	Reference	Reference	Reference
Some Covered No Restrictions	-$14	-$18	-$32
Some Covered Some Restrictions	-$15	-$20	-$38
Pharmacy Access			
All Pharmacies Available	$0	$0	$2
Some Pharmacies Available Including Current	Reference	Reference	Reference
Some Pharmacies Available Not Including Current	-$17	-$17	-$14
Mail Order Used for Best Benefits	-$12	-$10	-$6
Deductible			
$0	$10	$9	$10
$150	Reference	Reference	Reference
$310	-$9	-$10	-$16

Notes: * indicates significant differences in sensitivity to premiums at P=0.05 level following bootstrapping analysis. High income used as reference group.

Table 6: Marginal willingness to pay by number of medications

Attributes	0 meds	1-3 meds	4-7 meds	Over 7 meds
Premium	-5.45	-4.87	-4.65	-4.41*
Brand Copayment				
$25 or $40	$2	$3	$4	$4
25%	Reference	Reference	Reference	Reference
$35 or $60	-$1	$1	$1	$1
$45 or $95	-$5	-$7	-$9	-$8
Generic Copayment				
$0	$3	$5	$4	$5
$7	$1	$2	$2	$2
25%	Reference	Reference	Reference	Reference
$7 or 50%	$1	$0	-$1	-$1
Doughnut Hole Coverage				
None	Reference	Reference	Reference	Reference
Some Generics Covered	-$2	$0	$0	$6
All Generics Covered	-$2	$1	$1	$9
Formulary Coverage				
All Covered No Restrictions	$1	$2	$2	$2
All Covered Some Restrictions	Reference	Reference	Reference	Reference
Some Covered No Restrictions	-$14	-$16	-$17	-$17
Some Covered Some Restrictions	-$14	-$17	-$17	-$19
Pharmacy Access				
All Pharmacies Available	$1	$0	$0	$1
Some Pharmacies Available Including Current	Reference	Reference	Reference	Reference
Some Pharmacies Available Not Including Current	-$11	-$12	-$16	-$14
Mail Order Used for Best Benefits	-$8	-$9	-$4	-$7
Deductible				
$0	$9	$9	$10	$9
$150	Reference	Reference	Reference	Reference
$310	-$8	-$10	-$11	-$10

Notes: * indicates significant differences in sensitivity to premiums at P=0.05 level following bootstrapping analysis. Zero medications used as reference group.

Table 7: Marginal willingness to pay by out of pocket medication cost

Attributes	$0-$10 MOPC	$11-$40 MOPC	$41-$79 MOPC	>$80 MOPC
Premium	-5.01	-4.86	-4.31*	-3.60*
Brand Copayment				
$25 or $40	$3	$3	$5	$7
25%	Reference	Reference	Reference	Reference
$35 or $60	$1	$0	$1	$2
$45 or $95	-$6	-$8	-$5	-$9
Generic Copayment				
$0	$5	$5	$2	$6
$7	$2	$2	$0	$1
25%	Reference	Reference	Reference	Reference
$7 or 50%	$0	$1	$0	$2
Doughnut Hole Coverage				
None	Reference	Reference	Reference	Reference
Some Generics Covered	-$0	-$0	$0	$13
All Generics Covered	$1	$1	$4	$20
Formulary Coverage				
All Covered No Restrictions	$2	$2	$4	$2
All Covered Some Restrictions	Reference	Reference	Reference	Reference
Some Covered No Restrictions	-$16	-$15	-$21	-$27
Some Covered Some Restrictions	-$16	-$15	-$21	-$34
Pharmacy Access				
All Pharmacies Available	$1	$0	$0	$0
Some Pharmacies Available Including Current	Reference	Reference	Reference	Reference
Some Pharmacies Available Not Including Current	-$12	-$13	-$17	-$18
Mail Order Used for Best Benefits	-$9	-$8	-$13	-$10
Deductible				
$0	$10	$8	$10	$9
$150	Reference	Reference	Reference	Reference
$310	-$9	-$11	-$11	-$11

Notes: * indicates significant differences in sensitivity to premiums at $P=0.05$ level following bootstrapping analysis. MOPC indicates monthly out of pocket prescription cost. Reference group was those spending no more than $10 per month on medications.

Table 8: Importance scores by selected demographic characteristics

Attributes	Total Sample	Males	Females	Blacks	Whites	Low Income	Middle Income	High Income
Premium	50.3%	51.7%	50.0%	52.5%	45.3%	54.1%	47.6%	38.5%
Formulary Coverage	12.1%	12.3%	12.5%	11.2%	14.1%	10.9%	12.7%	17.2%
Deductible	11.6%	11.2%	11.8%	11.9%	11.0%	11.9%	11.3%	11.4%
Pharmacy Access	10.1%	9.1%	10.2%	9.7%	10.9%	9.5%	10.9%	9.7%
Brand Copayment	7.0%	6.6%	7.2%	6.9%	7.3%	6.8%	7.0%	8.5%
Generic Copayment	3.7%	3.3%	3.6%	3.5%	4.0%	3.4%	3.7%	5.2%
Doughnut Hole Coverage	3.5%	4.1%	2.9%	2.7%	5.5%	2.0%	5.0%	6.8%

Table 9: Importance scores by selected medical characteristics

Attributes	0 meds	1-3 meds	4-7 meds	Over 7 meds	$0-$10 MOPC	$11-$40 MOPC	$41-$79 MOPC	>$80 MOPC
Premium	57.6%	51.8%	50.2%	46.5%	53.3%	52.3%	45.5%	39.0%
Formulary Coverage	10.8%	11.7%	11.9%	13.3%	11.4%	10.9%	14.1%	16.7%
Deductible	12.0%	11.7%	11.9%	10.7%	11.9%	12.2%	11.4%	9.3%
Pharmacy Access	8.6%	9.9%	10.2%	10.3%	9.3%	9.8%	11.6%	10.7%
Brand Copayment	5.6%	7.0%	7.1%	7.1%	3.8%	9.8%	11.6%	10.7%
Generic Copayment	2.6%	3.8%	3.6%	3.9%	3.8%	3.6%	3.5%	4.3%
Doughnut Hole Coverage	1.6%	2.4%	3.2%	6.4%	2.5%	2.0%	4.5%	10.3%

Notes: MOPC indicates monthly out of pocket prescription cost.

Conclusions

- Doughnut hole coverage is a relatively small factor in most seniors decision making process, although seniors with higher out pocket medication cost, those with higher incomes, and those taking more medications place more importance on these factors
- Pharmacy Access exerted a significant influence on senior's choice of a prescription drug plan
- Seniors with high incomes may be willing to pay higher premiums for prescription drug plans

Conclusions

- Seniors may not be paying as much attention to out of pocket costs as they do premiums
  - Seniors seem to place greater importance on premiums relative to the younger population
  - There may be a market for individuals knowledgeable of Medicare Part D to assist seniors in enrolling in plans
- Conjoint analysis is a viable method to forecast seniors reception to features which are not in place currently

Future Study

- Incorporate seniors in nursing homes
- Study did not incorporate brand loyalty as this was not part of models on health plan choice or prescription drug plan choice
- Use multivariate techniques in order to explore impact of all covariates simultaneously
- Test simulation models to evaluate whether they accurately predict senior's responses to changes in attribute levels