



# Impact of Market Competition on Part D Plan Premiums

Does Competition Among Public Insurance Plan  
Options Work?  
(ARS Response Card: Channel 41)

# Disclosure

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“I Benjamin L. Howell, declare no conflicts of interest or financial interests in any product or service mentioned in this presentation, including grants, employment, gifts, stock holdings, or honoraria.”

# Learning Objectives

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- Describe why understanding the impact of market-based approaches to delivering health care is important.
- Describe the impact market competition on Part D Premiums in the early years of the program.

# Discussion Outline

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- Introduction — Why looking at market competition is important
- Prior Research — What is known
- Research Objectives — What this study will address
- Analytic Methods — How we addressed it
- Results — What we found
- Discussion — Why these results are important and what should be done along with important caveats

# Introduction: Setting the Stage

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- Market-based health care policies are dominating the national health policy agenda:
  - Medicare Part C/Medicare Advantage (MMA and earlier statutes)
  - Medicare Part D (MMA)
  - Health Insurance Exchanges (ACA)
  - Proposed Voucher Systems for Medicare (Ryan Plan)

# Introduction: Theory of Market Based Reform

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- Competitive forces arising from millions of beneficiaries seeking the best possible value for their health benefits will lead to a more responsive, less costly, and higher quality healthcare delivery system
- Assumes —
  - Beneficiaries are rational self-interested consumers
  - Beneficiaries have “perfect” information

# Introduction: Potential Market Failures

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- Annual beneficiary enrollment decisions may not be completely rational or particularly self-interested
  - Research indicates that Part D beneficiaries are not choosing the most cost effective Part D plan options
  - Beneficiaries are relatively uniformed about key aspects of the MA and Part D programs
  - Enrollment in MA and Part D plan are relatively sticky — low rates of plan switching

## Prior Research: Mixed Messages from Private HMO Market

- Most existing research has focused on the growth of Private HMO's in the mid 1990's
  - Wholey et al. found that between 1988 and 1991 greater levels of competition in HMO markets was associated with lower member premiums <Wholey, PMID=10143491 >.
  - Morrissey et al. however, found that the number of available HMO plans in a market had no effect on member premiums between 1993 and 1997<Morrissey, 14626008>.
  - Studies of private HMO plan mergers have only found minimal evidence of increases in market concentration being associated with higher member premiums, with positive, transitory effects only being observed in the most concentrated markets <Feldmen, 10158729; Christianson, 9444820>.
- No studies have examined either the Part D Program or MA program



# Research Objectives

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- The objective of our research is to examine whether greater levels of market competition in the Part D Program are associated with lower beneficiary premiums
  - Hypothesis 1: Plans in highly competitive markets, on average, will have lower premiums than plans in less competitive markets after local demand for drug coverage, and drug costs are accounted for.
  - Hypothesis 2: Plans in markets that are experiencing increasing levels of competition will have lower premiums after local demand for drug coverage, and drug costs are accounted for.

# Analytic Methods: Conceptual Framework

- In order to model the effect of competition on plan premiums, we will rely largely on the conceptual framework derived by Wholey et al <Wholey, 10143491 >.
- Plan Premiums are a function of:
  - factors influencing the elasticity of demand for an individual firm's coverage package (market competition)
  - the elasticity of demand for drug coverage in the market as a whole (market demand for drug coverage)
  - the marginal costs plans face in providing drug coverage (factors influencing the costs of providing drug coverage)
  - the ability of plans in the market to collude on pricing and coverage (Treated as a constant since plans are Federally administered)

# Analytic Methods: Data

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- We Obtained Data from 2 Key Sources:
  - Chronic Condition Warehouse
    - Information on Plan and Market Characteristics
  - Center for Plan Choice's Master Recon File
    - Plan level financial data
- Exclusions
  - MA Plans — Different animal, Hard to define markets
  - Plans without data in 2006, 2007, and 2008 — Excluded new plans and plans that went under
- N=1106

# Analytic Methods: Key Variables

Primary Outcome		
Variable Name	Description	Source
Premium <sub>ij</sub>	Premium for Plan i in market j for 2008	CCW: Premium file

# Analytic Methods: Key Variables

Measures of Market Competition		
Variable Name	Description	Source
$HHI_j$	Measure of Market Competition in Market j for 2007.	Calculated from CCW $H = \sum_{i=1}^N S_i^2$
$\Delta HHI_j$	Measure of change in Market Concentration in Market j between 2006 and 2007.	Calculated from CCW $HHI_{2006} - HHI_{2007}$
$Planshare_{ij}$	Share of total enrollment in Market j captured by plan i in 2007	Calculated from CCW
$Advantage_i$	Medicare Advantage plan penetration in market j in 2007.	Calculated from CCW

# Analytic Methods: Key Variables

## Measure of Market Demand for Drug Coverage

Variable Name	Description	Source
SES <sub>j</sub>	Average Socioeconomic Status of Beneficiaries in Market j. Measure based on the RTI SES imputation.	Calculated from CCW

# Analytic Methods: Key Variables

Measures of Costs of Providing Drug Coverage		
Dispensing <sub>j</sub>	Dispensing fee index for Market j. Measure of relative difference in average dispensing fees in the market relative to national average in 2006	Reported in 2006 Acumen study of the cost structure of the Part D Market
Ingredient <sub>j</sub>	Ingredient fee index for Market j. Measure of the relative difference in average ingredient costs in the market relative to the national average in 2006	Reported in 2006 Acumen study of the cost structure of the Part D Market
Loss <sub>ij</sub>	Loss Ratio for plan i in Market j for 2007.	CPC Master Recon File
$\Delta$ Loss <sub>ij</sub>	Change in Change in Loss Ratio for plan i in market j between 2006 and 2007	CPC Master Recon File
Benefit <sub>ij</sub>	Benefit package offered by plan i in Market j. Specified as a categorical variable (Standard Benefit, Enhanced with No Gap Coverage, Enhance with Coverage of Generics in Gap, Enhanced with Coverage of Generics and Preferred Brands in the Gap, and Enhanced with Coverage of All Generics and Brands in the Gap).	Computed from CCW

# Analytic Methods: Key Variables

- More on Loss Ratios:
  - Used formula from CPC:

$$Loss = \frac{\text{Covered Plan Paid Amount}}{\text{Part D Basic Premium} + \text{Direct Subsidy} + \text{Prospective Reinsurance} + \text{Prospective LI} + \text{LI Premium} + \text{Payment Reconciliation}}$$

- Ignores revenues and losses from the “enhanced” portion of benefit



# Analytic Methods: Key Variables

## Measures of plans ability to Collude

None

Since the Part D program is centrally administered and regulated, there should theoretically not be any market specific variation in the ability of plans to collude with one another. As such, the ability of plans to collude will be treated as a constant in our analysis and accordingly dropped from our model.

N/A

# Analytic Methods: Analytic Model

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- We estimated a multi-level linear regression model on the Log (Premiums)
  - Considered the effects of variables that varied both on the plan level and on the market level

# Analytic Methods: Analytic Model

- Plan Level Model:
  - $\text{Log}(\text{Premium}_{ij}) = \beta_{0j} + \beta_1 \text{Planshare}_{ij} + \beta_2 \text{Loss}_{ij} + \beta_3 \Delta \text{Loss}_{ij} + \beta_4 \text{Benefit}_{ij} + R_{ij}$
  - Where;
    - $\beta_{0j}$  is the Market Specific Constant for market j.
    - $\beta_1$  is the effect of  $\text{Planshare}_{ij}$  on  $\text{Log}(\text{Premium}_{ij})$ .
    - $\beta_2$  is the effect of  $\text{Loss}_{ij}$  on  $\text{Log}(\text{Premium}_{ij})$ .
    - $\beta_3$  is the effect of  $\Delta \text{Loss}_{ij}$  on  $\text{Log}(\text{Premium}_{ij})$ .
    - $\beta_4$  is the effect  $\text{Benefit}_{ij}$  on  $\text{Log}(\text{Premium}_{ij})$ .
    - $R_{ij}$  is the random error for plan i in Market j  $\sim N(0, \sigma^2)$

# Analytic Methods: Analytic Model

- Market Level Model

- $$\beta_{0j} = \gamma_{00} + \gamma_{01}HHI_j + \gamma_{02}\Delta HHI_j + \gamma_{03}Advantage_j + \gamma_{04}SES_j + \gamma_{05}Dispensing_j + \gamma_{06}Ingredient_j + U_{0j}$$

- Where;

- $\gamma_{00}$  is the global constant across all Markets
- $\gamma_{01}$  is the effect of  $HHI_j$  on  $\beta_{0j}$ .
- $\gamma_{02}$  is the effect of  $\Delta HHI_j$  on  $\beta_{0j}$ .
- $\gamma_{03}$  is the effect of  $Advantage_j$  on  $\beta_{0j}$ .
- $\gamma_{04}$  is the effect of  $SES_j$  on  $\beta_{0j}$ .
- $\gamma_{05}$  is the effect of  $Dispensing_j$  on  $\beta_{0j}$ .
- $\gamma_{06}$  is the effect of  $Ingredient_j$  on  $\beta_{0j}$ .
- $U_{0j}$  is the random error for Market  $j \sim N(0, \tau^2)$

# Analytic Methods: Analytic Model

- Combining the plan and market level equations:
  - $$\text{Log(Premium}_{ij}) = \gamma_{00} + \gamma_{01} \text{HHI}_j + \gamma_{02} \Delta \text{HHI}_j + \gamma_{03} \text{Advantage}_j + \gamma_{04} \text{SES}_j + \gamma_{05} \text{Dispensing}_j + \gamma_{06} \text{Ingredient}_j + \beta_1 \text{Planshare}_{ij} + \beta_2 \text{Cost}_{ij} + \beta_3 \Delta \text{Cost}_{ij} + \beta_4 \text{Benefit}_{ij} + U_j + R_{ij}$$
  - Coefficients can be interpreted in percent changes in premiums
  - Negative and significant values for the coefficient  $\gamma_{01}$  would provide evidence supporting the hypothesis that higher levels of market competition are associated reduced premiums
  - Negative and significant values for the coefficients  $\gamma_{02}$  would provide evidence that plans in growing markets are responding to increased competition with lower premiums.

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## Results: Overview of Part D Market Dynamics 2006-2008

	Herfindahl Index			Premiums			Loss Ratios		
	2006	2007	2008	2006	2007	2008	2006	2007	2008
<b>Northern New England (New Hampshire and Maine)</b>	0.19	0.19	0.18	28.84	28.67	31.32	0.63	0.65	0.66
<b>Central New England (Connecticut, Massachusetts, Rhode Island, and Vermont)</b>	0.14	0.13	0.11	23.31	26.49	30.94	0.64	0.68	0.7
<b>New York</b>	0.13	0.1	0.07	21.52	21.55	25.12	0.59	0.67	0.71
<b>New Jersey</b>	0.19	0.18	0.11	24.14	23.6	31.24	0.7	0.76	0.77
<b>Mid-Atlantic (Delaware, District of Columbia and Maryland)</b>	0.13	0.13	0.12	27.06	27.86	32.2	0.66	0.7	0.72
<b>Pennsylvania, West Virginia</b>	0.13	0.11	0.09	26.92	27.55	29.11	0.68	0.72	0.73
<b>Virginia</b>	0.14	0.13	0.12	28.17	29.01	33.24	0.67	0.7	0.72
<b>North Carolina</b>	0.12	0.12	0.1	32.05	33.58	35.95	0.64	0.68	0.7
<b>South Carolina</b>	0.1	0.1	0.09	30.1	29.77	32.24	0.62	0.67	0.7
<b>Georgia</b>	0.14	0.14	0.13	29.89	30.75	31.56	0.63	0.67	0.7
<b>Florida</b>	0.19	0.15	0.12	25.88	24.54	26.67	0.67	0.76	0.8
<b>Alabama, Tennessee</b>	0.16	0.14	0.12	27.43	29.32	30.96	0.61	0.65	0.67
<b>Michigan</b>	0.12	0.11	0.1	28.79	30.67	31.16	0.63	0.66	0.68
<b>Ohio</b>	0.16	0.14	0.1	26.55	28.63	31.39	0.65	0.68	0.71
<b>Indiana, Kentucky</b>	0.14	0.14	0.12	29.26	30.95	35.18	0.66	0.69	0.71
<b>Wisconsin</b>	0.11	0.1	0.11	25.5	29.08	31.79	0.69	0.72	0.78
<b>Illinois</b>	0.15	0.15	0.14	27.65	29.92	31.82	0.67	0.71	0.73
<b>Missouri</b>	0.16	0.15	0.14	26.07	27.53	30.24	0.66	0.71	0.75
<b>Arkansas</b>	0.17	0.16	0.15	27.95	28.64	28.84	0.62	0.67	0.71
<b>Mississippi</b>	0.15	0.14	0.14	28.68	29.17	30.6	0.61	0.66	0.69
<b>Louisiana</b>	0.13	0.12	0.11	30.94	28.62	28.11	0.6	0.66	0.68
<b>Texas</b>	0.14	0.13	0.1	27.7	27.46	28.68	0.63	0.67	0.7
<b>Oklahoma</b>	0.14	0.13	0.13	29.03	30.1	30.16	0.63	0.67	0.71
<b>Kansas</b>	0.18	0.18	0.17	26.13	27.39	31.96	0.73	0.77	0.81
<b>Upper Midwest and Northern Plains (Iowa, Minnesota, Montana, Nebraska, North Dakota, South Dakota and</b>	0.24	0.23	0.23	23.69	29.45	29.19	0.74	0.8	0.82
<b>New Mexico</b>	0.15	0.11	0.1	22.91	23.12	21.58	0.58	0.65	0.67
<b>Colorado</b>	0.17	0.14	0.11	24.61	27.32	30.34	0.67	0.71	0.75
<b>Arizona</b>	0.24	0.17	0.17	21.57	23.55	23.37	0.69	0.76	0.81
<b>Nevada</b>	0.15	0.13	0.11	22.32	24.4	24.82	0.69	0.74	0.78
<b>Oregon, Washington</b>	0.15	0.14	0.13	23.24	27.65	31.42	0.67	0.71	0.74
<b>Idaho, Utah</b>	0.2	0.18	0.17	23.9	28.48	34.38	0.7	0.74	0.76
<b>California</b>	0.14	0.13	0.09	20.12	20.25	24.45	0.61	0.68	0.7
<b>Hawaii</b>	0.17	0.15	0.13	23.88	24.14	23.8	0.53	0.57	0.61
<b>Alaska</b>	0.2	0.17	0.13	26.7	29.66	34.91	0.64	0.66	0.67
<b>National Average</b>	0.16	0.14	0.12	26	27.25	29.78	0.65	0.7	0.73

## Results: Overview of Part D Market Dynamics 2006-2008

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- Markets became more competitive between 2006 and 2008 time (0.16-0.12)
- Premiums on average also increased (\$26-\$30)
- Plan loss ratios increased on average (0.65-0.73), indicating plans became less profitable between 2006 and 2008
- Trends were not uniform across all markets



# Results: Overview of Part D Market Dynamics 2006-2008

- Some interesting patterns in the data

	Herfindahl Index			Premiums			Loss Ratios		
	2006	2007	2008	2006	2007	2008	2006	2007	2008
		2	4				1	3	5
New York	0.13	0.1	0.07	21.52	21.55	25.12	0.59	0.67	0.71
Louisiana	0.13	0.12	0.11	30.94	28.62	28.11	0.6	0.66	0.68
New Mexico	0.15	0.11	0.1	22.91	23.12	21.58	0.58	0.65	0.67
Hawaii	0.17	0.15	0.13	23.88	24.14	23.8	0.53	0.57	0.61
North Carolina	0.12	0.12	0.1	32.05	33.58	35.95	0.64	0.68	0.7
Wisconsin	0.11	0.1	0.11	25.5	29.08	31.79	0.69	0.72	0.78

# Results: Sample Characteristics

Sample Characteristics				
	Mean	Std. Dev.	Min	Max
<b>Outcome Variables</b>				
Premium 2008	38.07	18.08	10.40	107.50
Log(Premium 2008)	3.55	0.41	2.34	4.68
<b>Market Level Variables</b>				
HHI 2007	0.14	0.03	0.10	0.23
Delta HHI 2006-2007	0.01	0.01	0.00	0.07
MA Penetration 2007	0.26	0.15	0.01	0.57
Region SES Score 2008	0.52	0.01	0.49	0.55
Ingredient Fee Index	1.00	0.02	0.99	1.15
Dispensing Fee Index	1.04	0.14	0.87	1.88
<b>Plan Level Variables</b>				
Plan Market Share 2007	0.03	0.05	0.00	0.38
Plan Loss Ratio 2007	0.74	0.17	0.44	1.53
Delta Loss Ratio 2007-2006	0.06	0.10	-0.38	0.53
Enhanced Plan without Gap Coverage	0.29	0.45	0.00	1.00
Enhanced Plan with Gap Coverage	0.21	0.40	0.00	1.00

N=1106 Plans with Data from 2006, 2007, and 2008

# Results: Model Estimates

Multi Level Model Results (Fixed Effects)				
	Beta	Std. Err	t	P
<b>Market Level Variables</b>				
HHI 2007	-0.135	0.365	-0.370	0.711
Delta HHI 2006-2007*100	-0.022	0.010	-2.210	0.028
MA Penetration 2007*100	-0.002	0.001	-2.010	0.044
Region SES Score 2008*100	-0.001	0.007	-0.120	0.901
Ingredient Fee Index	-0.727	1.063	-0.680	0.494
Dispensing Fee Index	0.265	0.145	1.830	0.068
<b>Plan Level Variables</b>				
Plan Market Share 2007*100	-0.007	0.002	-4.610	<.0001
Plan Loss Ratio 2007*100	0.012	0.001	18.190	<.0001
Delta Loss Ratio 2007-2006*100	-0.010	0.001	-13.650	<.0001
Enhanced Plan without Gap Coverage	-0.058	0.021	-2.770	0.006
Enhanced Plan with Gap Coverage	0.433	0.028	15.510	<.0001
Constant	3.251	0.868	3.750	0.001

N=1106 Plans with Data from 2006, 2007, and 2008

## Results: Take Away Message

- Higher levels of market competition alone do not appear to be associated with lower plan premiums
- Year to year growth in market competition does appear to be associated with lower premiums, with each .01 unit change in HHI being associated with 2% lower plan premiums
  - $\$38.07 \times .02 = \$0.76$

## Discussion: Implications

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- We find evidence that market forces can work to keep beneficiary premiums and, by extension, Medicare Part D Costs down
  - Relies on continued entry/diffusion in the Market or threat of entry/diffusion
    - Plans need to be worried about their market share
  - Effects would be stronger if beneficiaries could be better consumers
    - Information Problem
    - Stickiness Problem

# Discussion: Policy Approaches

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- Reducing Number of Plan Options (Make Decision Simpler)
  - We tried this in 2009 — Removed duplicative plans under Part D Contracts
    - Firms likely got rid of underperforming options — Short term boost
    - Not clear if this made beneficiary decisions appreciably easier (Still a lot of Contracts/Plans)
    - Need to extend market dynamics table to 2009
  - Standardize Plan Options
    - Like Medigap
    - Firms would compete on price alone
    - Part D would lose a lot of its flexibility
    - We would lose innovation on the quality side of the value equation

# Discussion: Policy Approaches

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- Helping beneficiaries be better consumers
  - Better, more comprehensible decision support tools in the plan finder
    - Pre-screener questionnaire designed to identify beneficiary preferences and rank options according to those preferences
    - Connect plan finder with Part D data to automate the process of imputing drugs
  - Add social support/social marketing to plan finder
    - User Reviews
    - Information on what plans other/similar beneficiaries have chosen
    - Tools for caregivers and others helping with decisions — email recommendations
    - Needs to look a little more like amazon.com and less like a government website

## Discussion: Limitations

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- HHI designed more for commodity markets where goods are completely interchangeable — Part D plans likely aren't
  - HHI probably still better than a simple plan count
- Loss Ratios don't account for the “enhanced” portion of the benefit
- Didn't consider new plans entering the market — analysis limited to existing and presumably stable plans
  - New plans could look a lot different
- Didn't consider what happened to plans that went under — often consolidated into new or existing plans
  - No way to account for a Plan's “DNA” in the analysis



# Future Research

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- Analyze Data from 2009 and beyond
  - Interesting to see how eliminating duplicative plans effected the market
    - Could be short term costs and long term gains
  - Interesting to see if the market settles into normal insurance cycle or if a death spiral begins to emerge
- Analyze relationship between market competition and premiums using a longitudinal model with multiple years of data
  - Methodologically challenging due to the endogenous relationships between premiums and plan costs/risk
- Look at predictors of Plan Loss Ratios
  - Wanted to do this, but it proved difficult to model
- Look at the effect of competition on the MA program
  - Really hard

# Conclusion

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- First and only study of this kind for the Part D Program
  - No one else can do this because of the proprietary nature of the data
- Found evidence that market based solutions for Medicare and larger healthcare reform *can* work
  - This study doesn't speak to the comparative effectiveness of these kinds of solutions



# Assessments

# Assessment Question 1

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Why is understanding the impact of market-based approaches to delivering healthcare important?

1/A

Markets always yield the most efficient outcomes

2/B

Examples of market-based approaches to reforming healthcare are becoming increasingly common

3/C





Part D Plans exercise a great deal of market power

4/D

So people can know if they are paying too much for healthcare

## Assessment Question 2

According to our study, what was the impact of market competition on Part D premiums?

-  1/A Measures of competition had no impact of premiums
-  2/B High levels of competition were associated with higher co-pays
-  3/C Year-to-year growth in market competition was associated with lower Part D Plan Premiums
-  4/D On average, beneficiary premiums are too high



## Questions?

# Contact Information

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