Government Advertising in Market-Based Public Programs: Evidence from the Health Insurance Marketplace[1]

Naoki Aizawa

University of Wisconsin-Madison and NBER

You Suk Kim

Federal Reserve Board

July 24, 2020

Motivation

- ▶ Government conducts marketing and outreach activities for public programs.

  - ▶ Rationale of gov marketing in *traditional* public programs (e.g., food stamp): transaction cost/lack of information.
  - ▶ In *market-based* programs (e.g., health insurance), firms participating in the programs also conduct marketing.

- ▶ What are appropriate policy interventions in the presence of *private marketing activities*?

  The answer depends on how private marketing works:

  - ▶ Is private marketing much more effective than government?
  - ▶ Positive spillover vs business stealing?
  - ▶ Lack of economy of scale? (e.g., fixed cost of marketing)
  - ▶ Does government have different (e.g., redistributive) tastes?

Overview of This Paper

- We study TV advertising in ACA marketplaces:
  - Characterize targeting of TV ads by different sponsors (federal, state, private).
  - Estimate effects of TV ads on consumer demand via border discontinuity design.
  - Estimate an equilibrium model to illustrate mechanisms how gov ads can address inefficiency in market-based programs.

- Preview of Findings:
  - Private ads are **not** more effective than federal ads in increasing the total program enrollment.
  - Private ads increase insurer's own enrollment but do **not** have positive spillover to rivals.
  - Federal gov ads *can* simultaneously increase enrollment and mitigate excessive private ads competition.

Data and Descriptive Evidence

Data

- ► TV ad data from Kantar Media (Campaign Media Analysis Group):
  - ► Occurrence-level advertising information including spending and actual TV ad video.
- ► Example: federal ads.

Data

- Example: private ads by Molina and UnitedHealth.
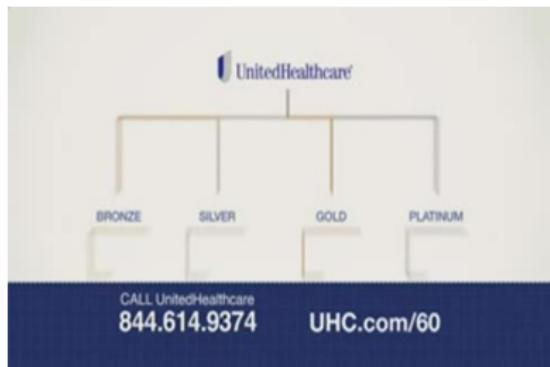
Data

- TV ad data from Kantar Media (Campaign Media Analysis Group):
    - Ad spending by different sponsors;
    - Ad contents via actual ad TV.
        - We document ad transcript (via Amazon Transcribe) and identify which information each ad contains:
        - e.g., subsidy, penalty, open enrollment, etc.

- Enrollment data from Center for Medicare and Medicaid Services 2014-2018.
    - Market- and plan-level enrollment data for federal & state-federal partnership marketplaces.
    - We supplement enrollment data of CA and NY state marketplaces.

Monthly Ad Spending

Summary Statistics
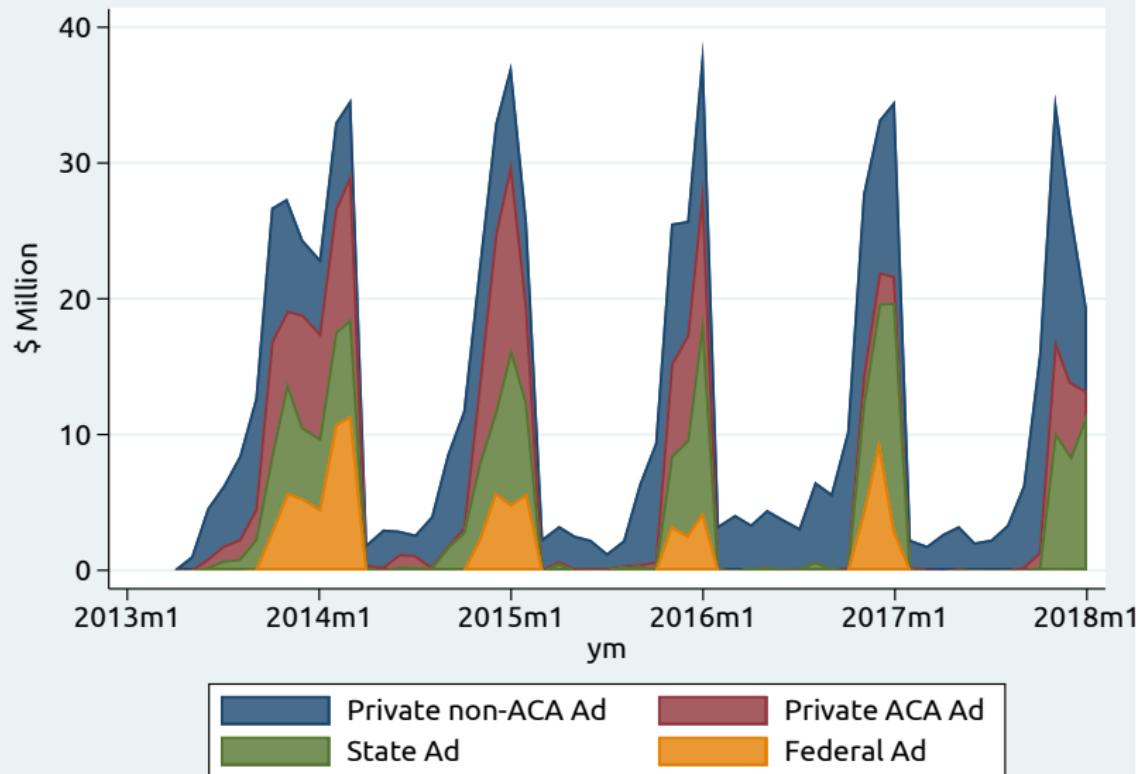
Geographical Targeting
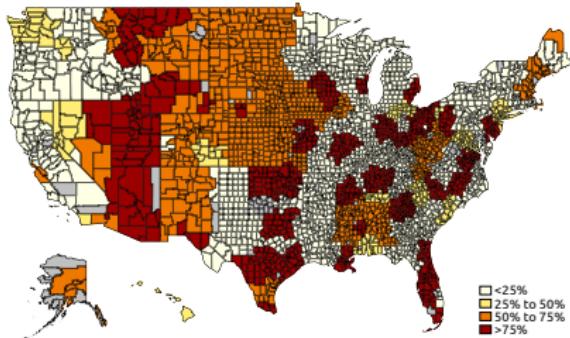
(a) Fed Ad per Capita
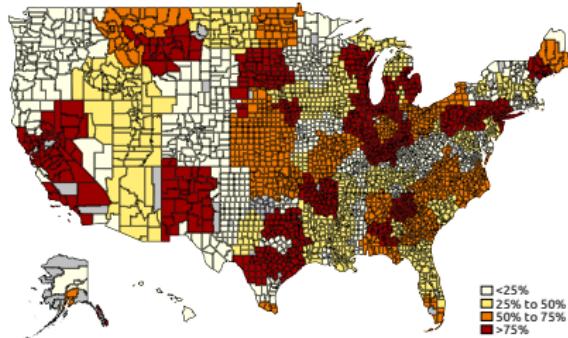
(b) Private Ad per Capita

▶ We also regress ad on market characteristics:

$$\log\left(1 + ad_{mt}^{\tau}\right) = X_{mt}\gamma + \xi_t + \epsilon_{mt}.$$

  ▶ Both priv and gov ads are larger in markets with more insurers.
  ▶ Priv ads are especially larger in markets with more potential enrollees or with Medicaid expansion. Target Regression

The Impact of Advertising on Consumer Demand

Effects of Advertising on Consumer Demand

- ▶ Estimate consumer demand at the level of
    - ▶ Market (county)-level enrollment
    - ▶ Insurer-level enrollment.

- ▶ Identification challenge: advertising is endogenous.
    - ▶ Potential correlation between ads and consumer preference.

- ▶ Our approach: TV ad border strategy: utilize pairs of adjacent border counties that belong to different DMAs (TV ad markets).

Identification Strategy

Wisconsin TV Markets
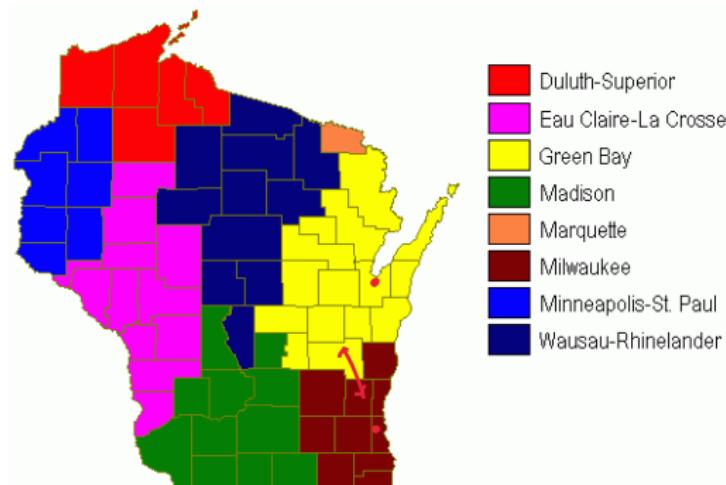
- Identifying condition: within each border pair, time varying unobserved demand between counties is uncorrelated with TV ad growth.

  - Control border x year FE, county FE, and rating area x year FE.
  - Border sample is balanced, regardless of ad spending.

Comparison across Borders   More on Border Strategy

Market-Level Enrollment

	(1)	(2)	(3)	(4)
Fed Spend ($)	0.041	0.041***	0.050**	0.050**
	(0.027)	(0.015)	(0.022)	(0.022)
State Spend ($)	-0.028	0.019	-0.011	-0.008
	(0.024)	(0.023)	(0.030)	(0.029)
Priv Spend ($)	0.006	0.011	0.023	0.024
	(0.011)	(0.012)	(0.019)	(0.018)
Navi Spend ($)				-0.055
				(0.120)
Dem Spend ($)				0.049***
				(0.017)
Rep Spend ($)				-0.015*
				(0.008)
BorderYear FE	Y	Y	Y	Y
County FE		Y	Y	Y
RatingYear FE			Y	Y
N. Obs.	18,862	18,812	18,154	18,154
Adj. R^2	0.707	0.911	0.916	0.916

$$\ln(s_{bct}) = \sum_{k \in K} \ln(1 + ad_{bm(c)t}^k)\beta_k + \boldsymbol{x_{bct}}\boldsymbol{\gamma} + \xi_{bt} + \xi_{r(c)t} + \xi_c + \epsilon_{bct}$$

s_{bct}: county-level take-up rate.

- Federal gov ads double $\Rightarrow$ take up increases by 5% (1.0 pp from 19%).
- State ads not effective on average: but very effective in CA.
- We **reject** $\beta_{mpriv} > \beta_{fed}$.

Consumer's Plan Choice Model

- Consumer i's indirect utility from a plan by insurer j:

$$u_{ijct} = \sum_{k \in K} \ln(1 + ad_{jm(c)t}^k)\beta_k + \xi_{jct} + \epsilon_{ijct}$$

  - $K = \{$fed, state, private own, rival, navigators, Republican, and Democrat$\}$.
  - Rival ads determine whether private ads have a positive spillover or business-stealing effect.
    - Positive spillover if $\beta_{rival} >> 0$.

- Outside option is to stay uninsured.

- Endogeneity of advertising: apply the border approach.

Estimates from Insurer-Level Choice Model

	(1)	(2)	(3)	(4)	(5)	(6)
Fed Spend ($)	-0.009	0.079	0.132***	0.125**	0.126**	0.129**
	(0.059)	(0.050)	(0.049)	(0.055)	(0.054)	(0.055)
State Spend ($)	0.012	-0.050	-0.032	-0.033	-0.029	-0.028
	(0.042)	(0.056)	(0.059)	(0.068)	(0.067)	(0.066)
Priv Spend ($)	0.217***	0.307***	0.148***	0.093**	0.092**	0.090**
	(0.034)	(0.049)	(0.040)	(0.046)	(0.046)	(0.046)
Rival Spend ($)					-0.037	-0.043
					(0.047)	(0.046)
Navi Spend ($)						-0.390
						(0.265)
Dem Spend ($)						0.049
						(0.036)
Rep Spend ($)						0.017
						(0.019)
FirmBorderYear FE	Y	Y	Y	Y	Y	Y
County FE		Y	Y			
FirmCounty FE				Y	Y	Y
FirmRatingYear FE			Y	Y	Y	Y
N. Obs.	39,782	39,750	38,296	36,558	36,558	36,558
Adj. R^2	0.791	0.822	0.895	0.942	0.942	0.942

▶ Own private ads are effective in all specifications: elas.=0.03.

▶ We **reject** $\beta_{rival} >> 0$.

  ▶ Insurer-level reduced-form enrollment regression suggests a significant negative effect of rival ads in certain markets.
  Reduced Form Regression

Additional Results

- Federal ads emphasizing open enrollment and financial assistance are very effective.
  - more effective than priv ads emphasizing open enrollment and financial assistance. `Link to Ad Content Analysis`

- We do **not** find robust evidence of significant heterogeneous (selection) effects of advertising (based on income and age). `Link to more demand results`

- Results are robust to different functional forms.
  - Ad effectiveness does not decay over years. `Link to Robustness`

- Modest dependence on state's Medicaid expansion status.

- Ad effectiveness of federal gov does not appear to depend on private ads (no complementarity). `Link to Interaction`

  - From insurer's perspective, ads between federal and private can be substitutes.

Counterfactual Experiments

Counterfactual Experiment: Motivation

- Our demand estimates suggest that gov ads can be a useful policy intervention in marketplaces:

  - The lack of positive spillover of private ads.
  - Private ads are not more effective than federal ads.
  - Some (small) insurers did not advertise likely due to the fixed cost of advertising.

- But gov ads may also crowd out private ads.

- We illustrate these mechanisms by setting up an equilibrium model.

Counterfactual Experiment: Supply Side Model

- Each firm optimally chooses its ads to maximize:

$$\max_{ad^p_{jmt}} \pi_{jmt} q_{jmt}(ad^f_{mt}, ad^s_{mt}, \boldsymbol{ad^p_{mt}}) - C_{jmt}(ad^p_{jmt})$$

- We characterize a Bertrand-Nash equilibrium in each market.

- We estimate π_{jmt} by exploiting firm's maximization problem.

  - The estimated median annual profit = \$756.

  - 15% of profit margin given that the average premium in 2017 is \$4,320.

- We simulate the effect of changing federal ads in two cases:

  - (Partial eqm.) Only consumers reoptimize.

  - (Full eqm.) Both consumers and insurers reoptimize.

Simulation Result

		Benchmark	Fed Ad×0		Fed Ad×3	
			Partial	Full	Partial	Full
All Markets	Enroll (%)	18.98	18.64	18.65	19.55	19.54
	Priv Ad ($)	1.43	1.43	1.51	1.43	1.35
Market w. Large Fed	Enroll (%)	17.87	16.66	16.72	19.22	19.17
Ad Spend (top 10%)	Priv Ad ($)	1.65	1.65	2.22	1.65	1.38

- ▶ Priv ads respond to changes in gov ads, but its response has a small effect on market-level enrollment.

- ▶ Private ads are excessive (prisoner's dilemma).

- ▶ Crowding out of private ads may reduce switching to better insurers.

  - ▶ But such welfare effects are much smaller than welfare effects from expanding market size (Finkelstein et al. 2019).

Conclusion

- Private ads are targeted differently from gov ads.

- Private ads are **not** more effective than federal ads in increasing the total program enrollment.

- Private ads increase insurer's own enrollment but do **not** have positive spillover effects.

- With an estimated equilibrium model, we illustrate that gov ads ***can*** simultaneously increase enrollment and mitigate excessive private ads competition.