Informing the Uninformed: How Drug Advertising Affects Check-Up Visits

Daniel Hosken
Brett Wendling
Federal Trade Commission*
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Advertising and Rx Drug Markets

- Advertising in Drug Markets is Controversial
  - Possibly Informative
    - Important Topic (Fatal Conditions) for a Potentially Underserved Population
    - Information Could be Misleading GAO (2006)
    - DTC Advertising Aimed at Least-Informed Agents (Patients)
  - Firm Incentives Could Mislead Consumers
    - Can Consumers Infer Truthful Information from Advertisements?
  - Advertising Is Potentially Wasteful
    - Some See It as Raising Drug Costs with Little Benefit
    - Rx Drug Costs are Large ($191 Billion) and Rising Quickly (11% - 20% Share of Medical Care)
- In 1997 FDA Lifts Advertising Regulation
  - Consumer Drug Advertising has Increased
    - $555 million (1996) to $3.2 billion (2004)
- Policy Questions:
  - Should Direct-to-Consumer Drug Advertising be allowed?
  - Should FDA more strictly regulate content, e.g., return to pre-1997 disclosure rules?

Our Study: Is DTC drug advertising beneficial?

- Measure how drug advertising affects a consumer's choice to see a physician for a Check-up.
- Focuses on a population of the "undiagnosed".
  - Policy Relevant Segment of the Population: untreated/uninformed consumers
- MEPS Person-level Panel Data
  - Can control for person-level heterogeneity using fixed-effects

Prior Literature

- Rx Drugs and Advertising
  - Meyerhoefer and Zuvekas (2008)
  - Iizuka and Jin (2005, 2007)
  - Wosińska (2002)
  - Rizzo (1999)
  - Ling, Berndt, and Kyle (2002)
  - Rosenthal, Berndt, Donohue, Epstein, and Frank (2003)
- Advertising and Health
  - Ippolito and Mathios, RAND(1990)

Advertising Data: TNS

- Total Advertising Expenditures By:
  - Drug, Region, Quarter, Media Type
- Advertising Almost All (>90%) National
  - We Aggregate to National Bi-Annual.
- Advertisement Dollars Appear Targeted
  - MTV: Birth Control and Acne
  - Golf Channel: Prostate Conditions and Allergy
- We Assigned Advertising Based on Sex and Age of Individual
  - E.g.: Menopausal Drug Advertising Assigned To Women Age>45
  - Aggregation Across “Relevant” Conditions Allows Spillovers Across Conditions

Variation in Advertising Expenses in our Data

- Advertising Varies Along Several Dimensions
  - Time
    - Large Increase In Advertising Over Time
  - Age
    - Some Advertising is Irrelevant for Certain Age Groups
      - E.g.: Birth Control Irrelevant for Post-Menopausal women.
  - Sex
    - Some Advertising is gender-specific
      - E.g.: Impotence, birth-control, prostate enlargement

MEPS: Medical Expenditure Panel Survey

- Nationally Representative Publicly Available Survey of Individuals
  - 2-year Panel of 30,000 People from 1997-2004
  - Construct 4 Six-month Periods for Each Person
- Demographic Information
  - Insurance Status
  - Age, Sex, Race, Income, Region, Family Structure
- Medical Care
  - Events: Office Visits
  - Directly Observe No Care Decisions
- Detailed Information on health
  - SRHS, Activity Limitations
  - Chronic Conditions: ICD-9 Codes

Empirical Model

- Dependent Variable
  - Indicator of Whether a Patient Visits a Physician for a Check-up in the Period
- Advertising
  - Varies By Age and Sex – Depends on Disease Category Advertised
  - National Level Aggregates Across Regions and Media Types
- Sample
  - Have No Diagnosed Condition Within Period
  - Individuals With Acute Conditions Come In and Out of Sample
  - Age > 35

Estimating Equation

$$\Pr ob(Visit_{it} = 1) = a_i + bz_{it} + \theta \log(DTC_{it}) + \sum_{k=1998}^{2004} \gamma_k Y_{it}^k + \lambda month1\_6_{it} + \varepsilon_{it}$$

- DTC – Expenditures on Direct-to-Consumer Advertising
- Z – Demographic Characteristics
- A – Person-specific fixed effects
- Y – Year Dummies
- Month1_6 – Seasonal Dummy
  - Coefficient in LPM is the Marginal Effect
  - Separate Equations Performed By:
    - Race
    - Sex
    - Education

Results

Table 3: Effect of Drug Advertising on Likelihood Of Checkup
Estimated Separately by Subgroup

	Pooled	Black	Hispanic	White and Other	College	High School	Less than High School
Men:							
Log(DTC)	0.055	0.116	0.028	0.055	0.166	0.021	0.031
	(.023)	(.065)	(.035)	(.032)	(.062)	(.032)	(.036)
Observations	35918	4791	8441	22686	8209	17158	10551
Women:							
Log(DTC)	0.147	0.201	0.063	0.162	0.242	0.159	0.085
	(.043)	(.108)	(.071)	(.059)	(.116)	(.062)	(.067)
Observations	29790	5103	7178	17509	5596	14753	9441

Robustness

- Use Advertising Measure that is Not Group-Specific (Only Time Variation)
  - Smaller coefficients, larger standard error.
- Are Trends Identifying the Effect?
  - Falsification tests:
    - “Incorrect Advertising” Does Not Explain Check-up Propensity

Discussion

- Person-level *Panel* Allows for a Rich Set of Individual Controls
- The Undiagnosed Population
  - Policy-Relevant Population Want to Inform
- Advertising Measure Allows for Spillovers across Conditions
- Evidence Suggesting Time Trends Are Not Responsible for Effect
  - Falsification Tests Suggest Irrelevant Advertising Does not Explain Visit Propensity
- Isolates Effects of DTC Advertising
  - Detailing Should Not Affect Check-up Propensities
  - Check-up Visits Can Be Assumed to Be Informative

Conclusions

- Direct to Consumer Drug Advertising appears to increase physician visits for undiagnosed patients.
  - Restrictions on advertising would lessen the likelihood this population seeks treatment.
- Advertising appears most effective for women and the highly educated.