Estimating the Effects of Advertising by Hospitals

PRESENTER: JEB JACOB
MENTOR: DR. ATUL GUPTA
CO-MENTOR: SARAH SCHUTZ, PHD CANDIDATE
Larger Project: How do Health Care Providers Deploy Public Funds?

- Context: Taxpayer funds from the ACA (Affordable Care Act) increased revenue by 10-15% for the average hospital (Duggan et al., 2019; Dunn et al., 2019)

- Can we quantify the impact of this revenue increase on inputs in care delivery?

- SUMR Aims: To understand how Advertising Spending influences the allocation of Care Inputs & allocation of Patients across providers
Methods

- Task: Create a Crosswalk between two data sources

1) **Television Ad Spending Data** in $/min: Nielsen Company keeps track of Hospital Advertising

2) Care Inputs in **AHA (American Hospital Association) Survey Data**: payroll spending (labor), number and type of hospital beds, therapies offered

- 2010-2017: compare before and after ACA (2014)
Key Data Points in Matching Hospitals

- Match with Name and Location

1. Nielsen Data
   - Hospital Name
   - DMA (Designated Market Area or region for specific television market as defined and updated by the Nielsen Company)

Key Data Points in Matching Hospitals

- (2) AHA Data
  - Hospital Name
  - AHA ID
  - System Name
  - Zip Code = “DMA”
Challenges in Matching: Hospital Name

- Ideally, we could do a direct string-to-string match for all hospital names.
- Nielsen Data has its own random notation for hospital names
  - “rehabilitatn” or “rhlbt” translates to “rehabilitation” in AHA Data
- Nielsen Hospital Name could be a system name or individual hospital name
- Hospital Mergers & Acquisitions change the hospital names/systems over time
Challenges in Matching: Hospital Location

- Standalone Hospital advertising in__________
  (1 DMA)
  (multiple DMAs but within 1 state)
  (neighboring states)
  ("random" states)

<table>
<thead>
<tr>
<th>System located in</th>
<th>and advertising in</th>
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<tbody>
<tr>
<td>________</td>
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<td>(1 “DMA”)</td>
<td>(1 DMA)</td>
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<td>(multiple “DMAs” but only 1 state)</td>
<td>(multiple DMAs but within 1 state)</td>
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<tr>
<td>(neighboring states)</td>
<td>(across neighboring states)</td>
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<tr>
<td>(&quot;random&quot; states)</td>
<td>(across “random” states)</td>
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Next Steps & Considerations

- National Advertising as a separate case
- Attributing Spending to individual hospitals
- How do we define a “random” DMA?
- After manual individual hospital matching, complete the next round of the matching process by system name.
Research Lessons

- Data is not usually codified universally
- Comparing/Merging datasets require judgement calls
- Just Ask!
- Research tasks (especially pre-processing & Cleaning Data) take longer than you think
Thank you!

- Dr. Gupta, Sarah Schutz
- Joanne, Evelyn
- Q&A