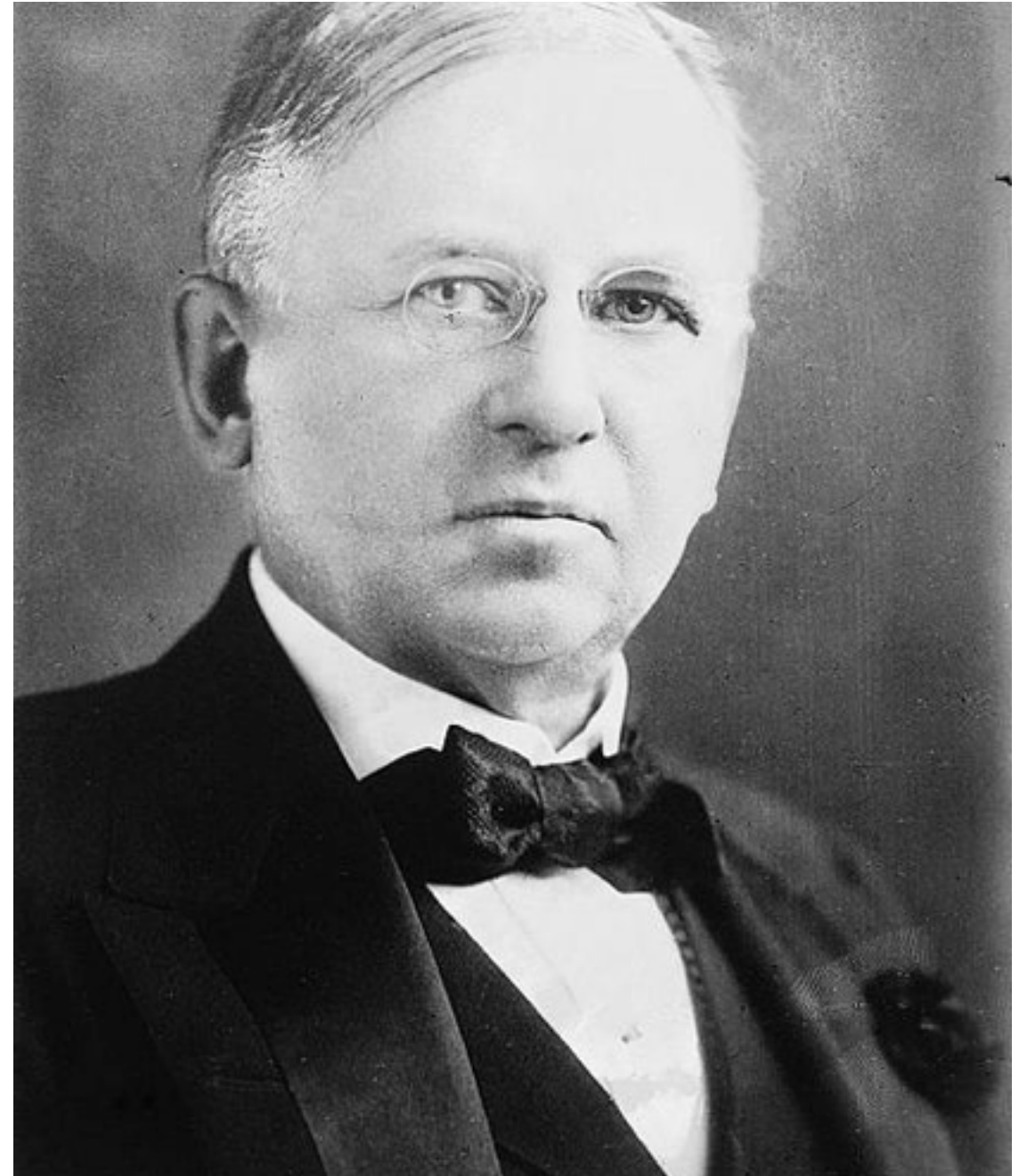# Towards a Digital Attribution Model:
Measuring Impact of Display Advertising on Online Consumer Behavior

Ghose & Todri

Discussant: John Horton, NYU Stern

"the trouble"

- "Half the money I spend on advertising is wasted; the trouble is I don't know which half."
- John Wanamaker

What makes this a difficult problem in general?

- Pre-electronic commerce: we did not know who **saw our advertisements** nor who ultimately **made a purchase**

- Now: with the modern web, tracking and online purchases, the data are there.

  - The measurement problem is more or less solved.

- New problem: With active targeting and endogenous exposure to advertisements, causal attribution is difficult.

Example:
Buying a new laptop

This paper

- Very rich and complete dataset from a larger advertiser with both exposures and purchase data

- Clever use of econometric approaches to tease out causality

- A promising method that can be used for future research

Consider three customers searching for "surface book"
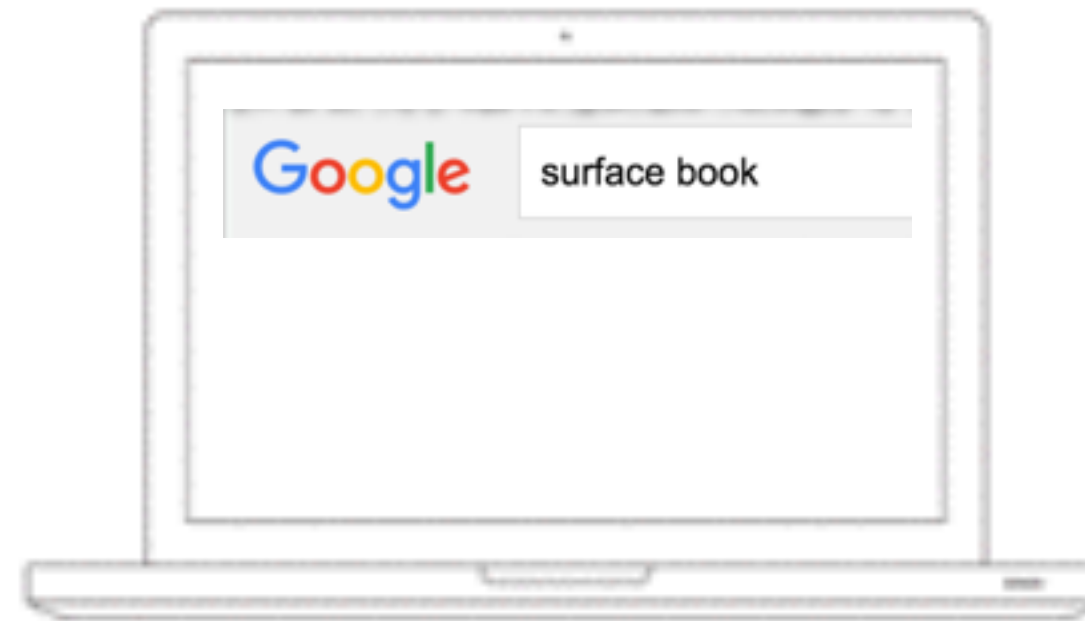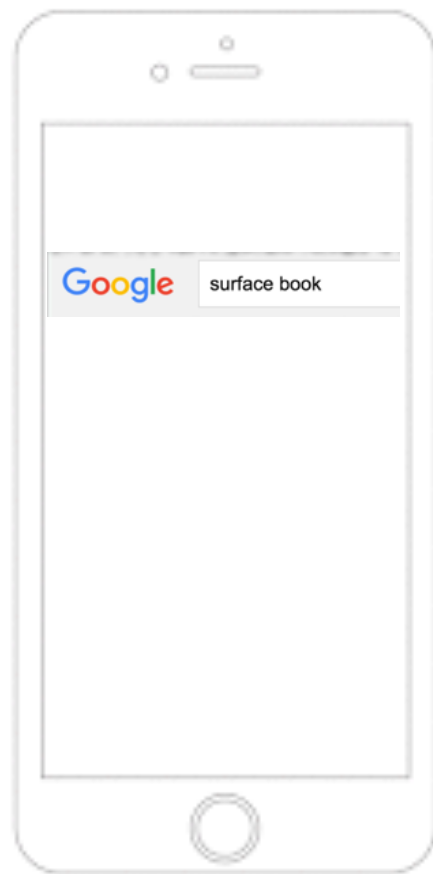
Difference screen sizes and user scrolling behavior creates variation in ad exposure
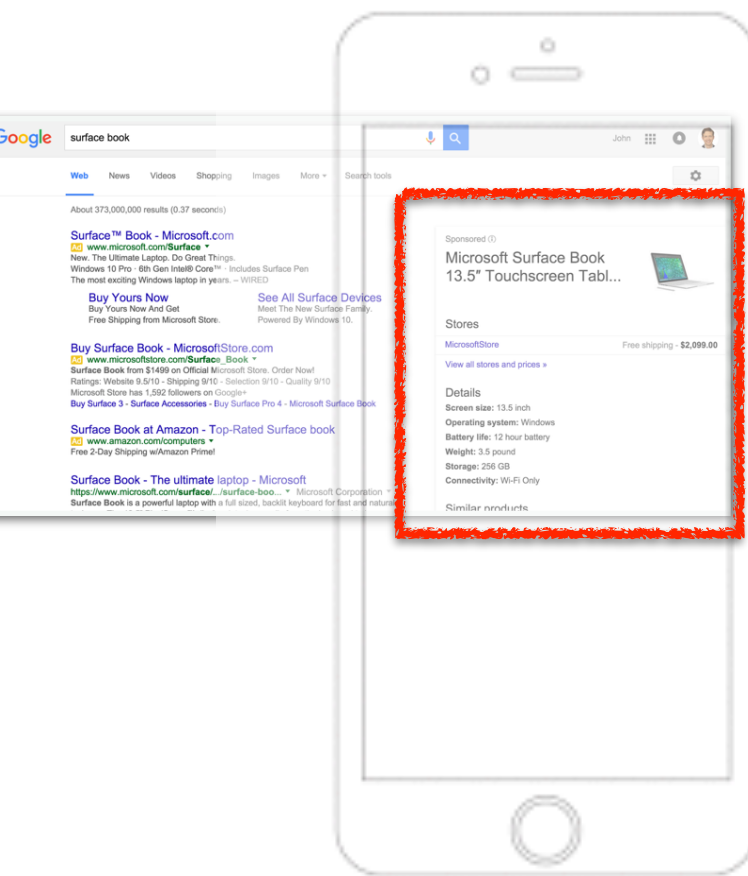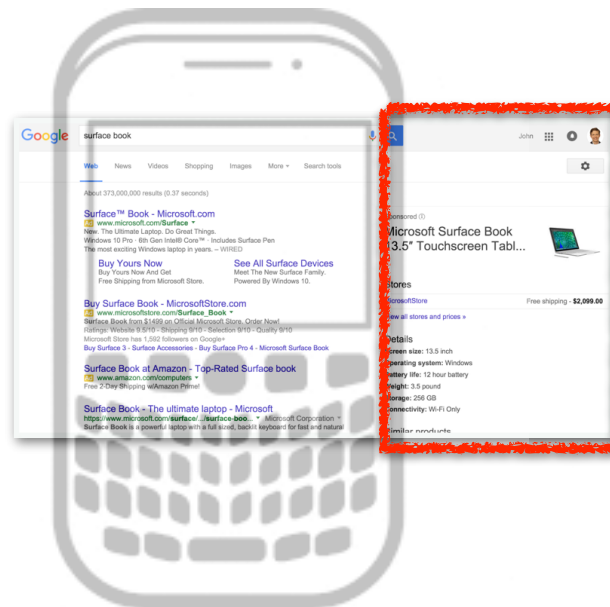
Main threats to identification

- "Viewability" of an advertisement could be related to individual characteristics correlated with outcomes of interest

  - The paper uses a variety of methods (matching, individual-specific fixed effects and so on) to deal with this possibility

  - In addition, they use micro data on weather to create an instrument for exposure

Recommendations & Comments

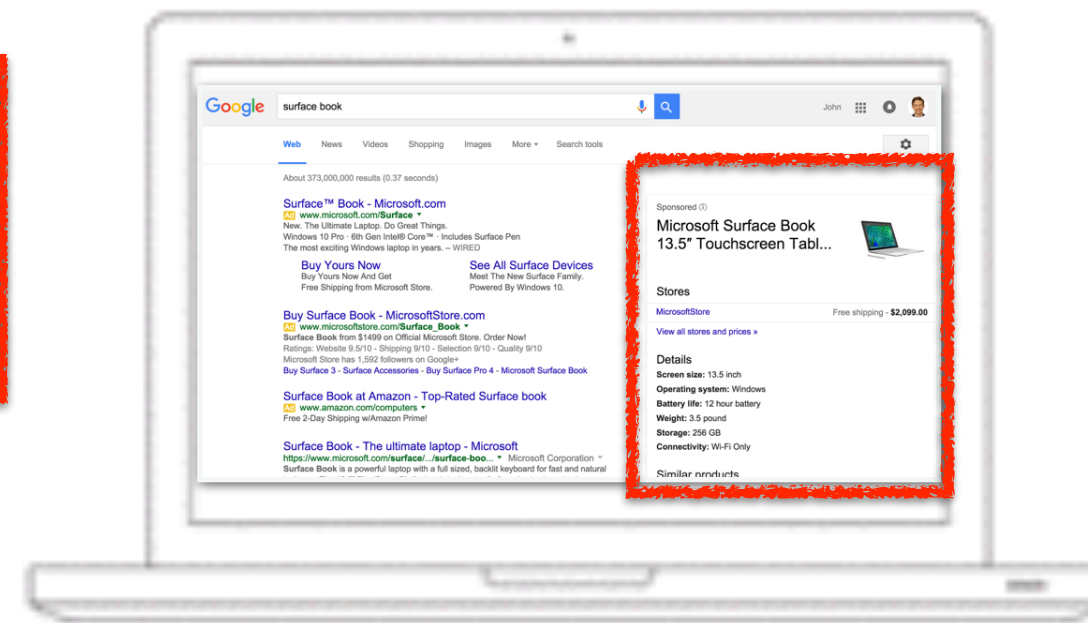- Given clear usefulness of quasi-experimental results (and the enormous samples), can advertisers be persuaded to run true experiments?

  - I'm skeptical that <u>any</u> CMO & team would have the technical ability to replicate Ghose & Todri - econometrics is hard; simple t-tests are not.

  - Also, these are marginal effects (& they are LATE effects)—what would ATE look like, conditioned upon different prior exposures of different channel types?

    - In other words, we'd like to know $\hat{Y}(\vec{X})$ not just $\frac{\partial \hat{Y}(\vec{X})}{\partial \vec{X}}$