Advanced A/B Testing

Introduction

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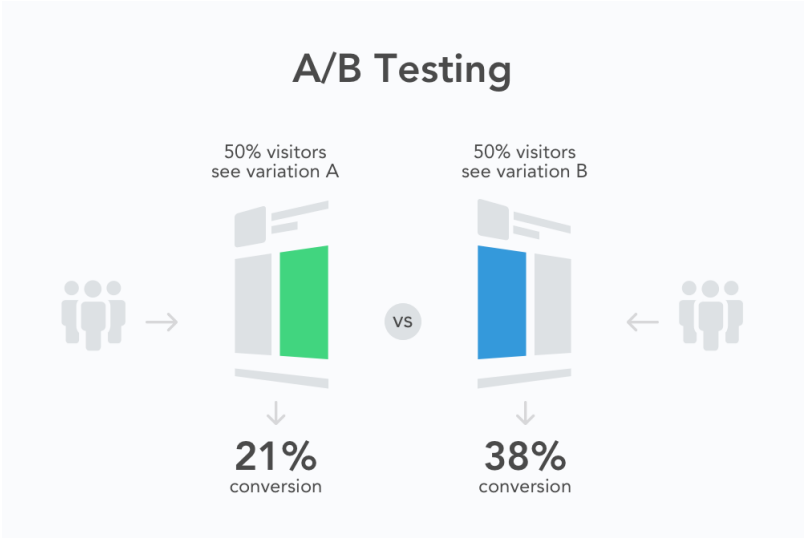

Figure 1:

Source: adtmetrics.com

Example A/B test

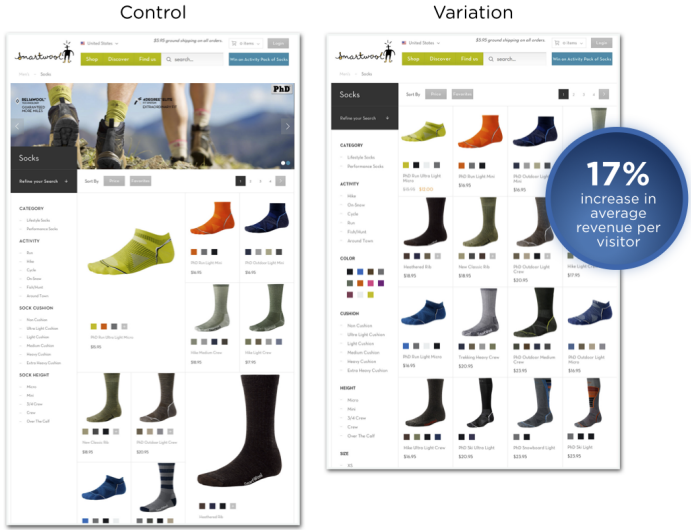

Figure 2:

Why A/B tests work

By **randomizing** over a large number of customers, we create groups that are the same, on average.

Any behavioral differences between these groups is **caused by the treatments** we randomly assigned.

1, 2, 3. Repeat with me. Randomization will set you free.

Workshop plan

- Test Analysis Basics (review?)
  - Randomization checks
  - Analysis
  - Sample size planning
- When your sample size is big
  - Slice and dice
  - Uplift modeling
  - Causal forests
- When your sample size is small
  - Pre-test matching
  - Post-stratification
- Making decisions
  - Test & roll
  - Multi-armed bandits
- When you can't randomize (time permitting)
  - Propensity matching
  - Causal forests

About Elea McDonnell Feit

- Professor at Drexel University
  - Teach data-driven digital marketing and marketing experiments
  - Develop new marketing analytics tools
    - Measuring Multi-Channel Advertising Response
    - Test & Roll: Profit-Maximizing A/B Tests
  - Make analytics accessible to practitioners
    - R for Marketing Research and Analytics
- Previously
  - General Motors
  - The Modellers
  - Wharton Customer Analytics

Materials

Slides and code on github: (https://github.com/eleafeit/ab_test).

How to use the materials

We will walk through a set of examples that I created using R.

- If you don't know R, let me drive the R syntax so that you can focus on **where we are going**. Download the slides and follow along.
- If you are learning R, you should also let me drive. I can answer some R syntax questions along the way, but I don't want to get stuck in the syntatical mud. The code will be there later when you want to review.
- If you know R, download the RMarkdown files and run the code as we go along.
- I'm adaptable. Please ask questions so I can calibrate.