Online Advertising Incrementality Testing

Industry Practical Lessons And Emerging Challenges

Joel Barajas, **Narayan Bhamidipati, James G. Shanahan**

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Who we are ...

Joel Barajas
Sr Research Scientist
Yahoo! Research,
Sunnyvale, CA, USA

Linkedin

Narayan Bhamidipati
Sr. Director, Research
Yahoo! Research,
Sunnyvale, CA, USA

Linkedin

James G. Shanahan
Church and Duncan
Group Inc
UC Berkeley, CA, USA

Linkedin

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Tutorial Parts

1. The basics: context and challenges

2. Incrementality Testing: concepts, solutions and literature

3. From concept to production: platform building, challenges, case studies

4. Deployment at Scale: test cycle and case studies

5. Emerging trends: identity challenges, industry trends and solutions

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Part 1

The basics: context and challenges

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Context: Business Need
Kireyev et al. (2016), Li and Kannan (2014)

Response Curve
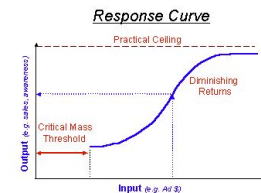
Why we need to run incrementality tests

1. Measure channel spend effectiveness for **optimal budget allocation** and planning.
   - *Channels* are often **marketing specific media**, eg social, paid search, programmatic display, TV, radio, etc

2. Calibrate **Media Mix Models** to estimate the channel response curve at different spend levels
   - *Media Mix Models* are often **financial time-series based models** that predict aggregate marketing spend performance in yearly/quarterly planning

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Context: Business Need
Kireyev et al. (2016), Li and Kannan (2014)

As a result, tests are often run at channel aggregate level

1. Channel level requires **all advertiser spend** aggregated over weeks (even months) of testing
   - Results often inform quarter budget allocations with a measure of lift and efficiency, eg **cost per incremental conversion (CPIA)**

2. **CPIA** provides a **reliable comparison with other channels** regardless of the channel in the funnel
   - A standard challenge with spend planning based on last-touch attribution is the **highly imbalanced conversion rates between demand-capture and demand generation channels**

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Context: Business Demand for Testing
Chan et al. (2010), Gordon et al. (2019)

Why testing when we have numerous causal inference frameworks?

1. Because observational studies without deliberate interventions often **greatly overestimate** the value of online ads
   - Even in the **presence of rich confounding features, *Gordon et al* could not replicate experiment** results in a large number of tests and with multiple causal inference techniques

2. Running **randomized controlled experiments** is the gold standard in marketing incrementality measurement.
   - A widely accepted notion in the online advertising industry

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Context: Business Use Cases
Barajas and Bhamidipati (2021)

Typical use cases for online advertising vendors

- **New advertiser** wants to *test waters* before fully deploying budgets
  - Generating trust, a successful test leads to **incremental revenue** for the ad network

- Existing advertiser wants to **scientifically prove incremental value**
  - Regular incrementality tests to **assess the strategy**, from advertiser's conversion metric definitions to provide certainty of the current budgets

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Context: Business Use Cases
Barajas and Bhamidipati (2021)

Typical use cases for online advertising vendors

- Incrementality of **tactical practices** with external validity for future deployment
  - Examples include: **CRM vs new customers, prospective vs remarketing**, etc

- Quarterly regular **strategic adjustments** (retrospectively)
  - From test insights, **targeting and optimization recommendations** to improve incremental value

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Testing in a Nutshell

Why incrementality testing is hard?

Incrementality Testing in a Nutshell

Goal:

Find Aggregate Effect of Marketing Spend

Randomized unit:
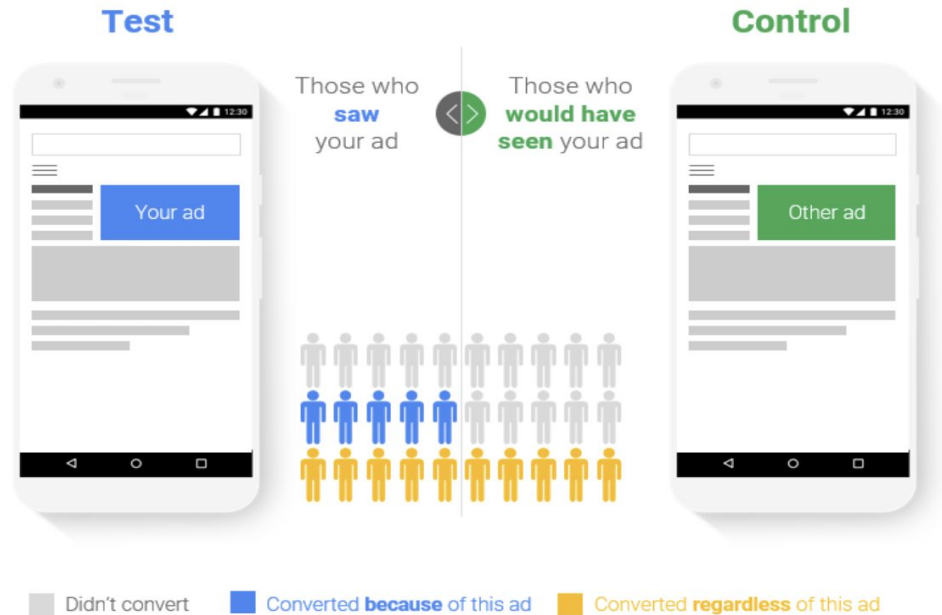
Users (our best notion)

Intervention:

Marketing Spend leading to ad delivery

Control:

No marketing ads

Metrics:

Converter Lifts, Cost per incremental converter/conversions, among others

Test

Control

Those who **saw** your ad

Those who **would have seen** your ad

Your ad

Other ad

Didn't convert   Converted **because** of this ad   Converted **regardless** of this ad

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If this is *just* an A/B test, why we need more?

We'll review in next part of the tutorial....

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