Incrementality
APOCALYPSE: AN INCREMENTALITY SURVIVAL KIT
Who am I?

- Booster Box
- Advisor for Google’s own equity fund Capital G
- @ktzstyle
- Not a Data Scientist
An international team of +60 Data Scientists, Developers and PPC Specialist
We’re the best* scientific performance marketing agency

* according to our mums
How it started

How it is going
facebook

$10$

$25$

Google

$20$

$25$
*** Cliche’ alert ***
“Half the money I spend on advertising is wasted; the trouble is I don't know which half.”

John Wanamaker (1838-1922)
If you cannot measure it, it does not exist!

PPC people (all the time)
A simple source of truth does not exist
Agenda

Chapter 1 - Why measurement is a challenge?

Chapter 2 - How to survive?
Did eBay Just Prove That Paid Search Ads Don’t Work?

by Ray Fisman

March 11, 2013
eBay Ad Tests Figure 2: Brand Keyword Click Substitution

≈ Perfect Substitution!

(a) MSN Test
(b) Google Test

Note: MSN and Google click traffic is shown for two events where paid search was suspended (Left) and suspended and resumed (Right).
Adidas: We over-invested in digital advertising

Adidas admits that a focus on efficiency rather than effectiveness led it to over-focus on ROI and over-invest in performance and digital at the expense of brand building.

The new dot com bubble is here: it’s called online advertising

In an all-female world, we need to focus on how to use digital advertising to drive real results. How do we know if any of it is real? What do we really know about the effectiveness of digital advertising?

How could Uber cut its ad spend by $100m and see no drop in conversion?

How could Uber cut its ad spend by $100m and see no drop in conversion? - Beacon, 2021 - Stewart Boutcher

Chase Had Ads on 400,000 Sites. Then on Just 5,000. Same Results.

Chase Had Ads on 400,000 Sites. Then on Just 5,000. Same Results. - NY Times, 2017 - Sapna Maheshwari

When Procter & Gamble Cut $200 Million in Digital Ad Spend, It Increased Its Reach 10%

When Procter & Gamble Cut $200 Million in Digital Ad Spend, It Increased Its Reach 10% - AdWeek, 2018 - Lauren Johnson
Have Marketers Over-Invested in Performance?

"Brands have over-invested in performance at the expense of brand"

- Strongly agree: 32%
- Agree: 38%
- Neutral: 20%
- Disagree: 9%
- Strongly disagree: 1%

Published on MarketingCharts.com in December 2019 | Data Source: WARC

Based on a survey of almost 800 marketers and agencies around the world
How people decide what to buy lies in the ‘messy middle’ of the purchase journey

Alistair Rennie, Jonny Protheroe / July 2020
Smart Bidding
Perform. Max
RSA
UAC
Automated Extension
Smart Shopping
DSA
Discovery
“When everybody is super, no one will be.”

Syndrome, The Incredibles
ML will level down the competition
COINCIDENCE?

I DON'T THINK SO.
Apple privacy push capped rivals and helped its own ad network thrive

Share of total installs (%)

- Apple Search Ads
- Facebook
- Snap
- Google Ads
- TikTok
- Other

iOS 14.5 was launched April 26 this year
Source: Branch
© FT
Cookieless? Possible impact on Measurement

- No post view
- No granular path reporting
- No cross channel reporting
- No MTA?
How to Improve Tracking

- Conversion Linker
- Enhanced Conversions
- Server Side Tagging
  - FB cAPI
  - GAAd
Federated Learning of Cohorts
Chapter 1 - Why measurement is a challenge?

Chapter 2 - How to survive?
Measurement
= Incrementality + Attribution + Long term value + First party data
Who’s getting the credit for the conversions we are getting?
Incrementality

How many conversions would we have gotten anyway?
How many conversions would we have gotten anyway from Facebook ads if we went chilling on the beach?
Measurement = Incrementality + Attribution + Long term value + First party data
Attribution today = MTA
<table>
<thead>
<tr>
<th>Method</th>
<th>How It Works</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIRST TOUCH</td>
<td>Assigns 100% of credit to first AdWords touch point</td>
<td>Maximize TOFU credit distribution. Favors customer acquisition</td>
<td>Favors highly competitive terms – likely to be inefficient</td>
</tr>
<tr>
<td>U-SHAPED (POSITION</td>
<td>Assigns 40% of credit to first + last touch point. Distributes remaining</td>
<td>Emphasizes key touches while giving some credit to early efforts</td>
<td>Can undervalue middle touch points, especially for long purchase cycle</td>
</tr>
<tr>
<td>BASED)</td>
<td>20% evenly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LINEAR</td>
<td>Every touch point is assigned equal credit</td>
<td>Every touch point is considered.</td>
<td>Undervalues key touch points, over values minor touch points.</td>
</tr>
<tr>
<td>TIME DECAY</td>
<td>Bulk of credit assigned to last touch, diminishing value assigned to earlier</td>
<td>High efficiency while distributing some credit to TOFU</td>
<td>Overvalues last touch efforts (brand, remarketing)</td>
</tr>
<tr>
<td>LAST CLICK</td>
<td>The worst Jerry, the worst.</td>
<td>Maximize efficiency</td>
<td>Significantly overvalues brand terms, remarketing. Favors customer recycling</td>
</tr>
</tbody>
</table>
Attribution models can be divided in 2 groups

Heuristic Models

- Used by most advertisers
- Assign values across positions in the chain
- Examples:
  - Last Click
  - First Click
  - Position Based
  - Linear
  - Time Decay

Algorithmic Models

- Used by advanced advertisers
- Assign values to each touch point based on user dynamics
- Examples:
  - Custom Models
  - Data-Driven
  - Markov Chains
  - …
Markov’s chain
Challenges with MTA we always had

- Post impression
- Cross device
- Cross platforms
- User journeys is not a “funnel” but a “messy middle”
New technological challenges

MTA

APPLE IDFA
IOS 14

GDPR

FIREFOX
ETP

CHROME 3rd
Party Cookies

APPLE
ITP

CCPA
Is MTA going to die?

- First party MTA (GA, FB Ads, G Ads …) **probably not**

- Third party MTA **probably yes**
Figure 1. Hype Cycle for Digital Marketing, 2020

As of July 2020

Plateau will be reached:
- less than 2 years
- 2 to 5 years
- 5 to 10 years
- more than 10 years
- obsolete before plateau

Source: Gartner
ID: 441648

Hype Cycle for Digital Marketing - Gartner, 2021
MTA adoption has taken a small step back since 2019

Percentage of companies currently using MTA or planning to do so in the future

- We don’t plan to use MTA in the near future
- We will use in the next 18 months
- We will use in the next 12 months
- We will use in the next 6 months
- We currently use MTA

Does your company currently use a multi touch attribution (MTA) solution or do you plan to use one in the future? Sample size in 2020 (NA): N= 324, EMEA N=186, APAC N=155, LATAM N=54 * small base.

State of Multi-Touch Attribution (MTA) 2021 – Marketer Benchmark Survey - MMA Global, 2021
Measurement = Incrementality + Attribution + Long term value + First party data
A good reminder...

Number of people who drowned by falling into a pool correlates with Films Nicolas Cage appeared in

YOU DON’T SAY?
3 Approaches

A. Lift

B. Geo Testing

C. MMM (Marketing Mix Modeling)
<table>
<thead>
<tr>
<th>Goal of the Analysis</th>
<th>Focus</th>
<th>Approach</th>
<th>Type</th>
<th>Main Link</th>
<th>R Code</th>
<th>Python Code</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Incrementality</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>User Based</td>
<td>FB Conversion Lift</td>
<td>External</td>
<td><a href="https://www.facebook.com/business/m/sneakers/conversion-lift">https://www.facebook.com/business/m/sneakers/conversion-lift</a></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>YT Brand Lift</td>
<td>External</td>
<td><a href="https://support.google.com/googleads/answer/9038086">https://support.google.com/googleads/answer/9038086</a></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Google Search Lift</td>
<td>Beta</td>
<td><a href="https://support.google.com/googleads/answer/10014316">https://support.google.com/googleads/answer/10014316</a></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Google Audience test</td>
<td>Beta</td>
<td><a href="https://support.google.com/analytics/answer/6155470?hl=en#zippy=in-this-article">https://support.google.com/analytics/answer/6155470?hl=en#zippy=in-this-article</a></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Geo Based</td>
<td>Geo X Light</td>
<td>Beta (only APAC availability in Australia, India and Japan)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Geo Experiment Time Based (TBR)</td>
<td>Open Source</td>
<td><a href="https://research.google/pubs/pub45950/">https://research.google/pubs/pub45950/</a></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Optimization</td>
<td>Ad Variation</td>
<td>External</td>
<td><a href="https://support.google.com/googleads/answer/7438541">https://support.google.com/googleads/answer/7438541</a></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Draft &amp; Exp</td>
<td>External</td>
<td><a href="https://support.google.com/googleads/answer/5518732?hl=en">https://support.google.com/googleads/answer/5518732?hl=en</a></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Video Exp</td>
<td>External</td>
<td><a href="https://support.google.com/displayvideo/answer/9040669?hl=en">https://support.google.com/displayvideo/answer/9040669?hl=en</a></td>
<td></td>
</tr>
</tbody>
</table>
www.boosterboxdigital.com/fos2021/
Which of these smart home devices would you consider buying?

- Google Nest Hub
- Lenovo Smart Display
- Amazon Echo Show
- None of the above

Submit Answer
3 Approaches

A. Lift

B. Geo Testing

C. MMM (Marketing Mix Modeling)
<table>
<thead>
<tr>
<th>Goal of the Analysis</th>
<th>Focus</th>
<th>Approach</th>
<th>Type</th>
<th>Main Link</th>
<th>R Code</th>
<th>Python Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incrementality</td>
<td>User Based</td>
<td>FB Conversion Lift</td>
<td>External</td>
<td><a href="https://www.facebook.com/business/m/one-sheeters/conversion-lift">External Link</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incrementality</td>
<td>User Based</td>
<td>FB Brand Lift</td>
<td>External</td>
<td><a href="https://www.facebook.com/business/help/169338144765058576548473890200888">External Link</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incrementality</td>
<td>User Based</td>
<td>YT Brand Lift</td>
<td>External</td>
<td><a href="https://support.google.com/google-ads/answer/9038096">External Link</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incrementality</td>
<td>User Based</td>
<td>Google Search Lift</td>
<td>Beta</td>
<td><a href="https://support.google.com/google-ads/answer/10014316">External Link</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incrementality</td>
<td>User Based</td>
<td>Google Audience test</td>
<td>Beta</td>
<td><a href="https://support.google.com/analytics/answer/6155470?hl=en#zippy=%2Cin-this-article">External Link</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incrementality</td>
<td>Geo Based</td>
<td>Geo X Light (only APAC availability in Australia, India and Japan)</td>
<td>Beta</td>
<td><a href="https://support.google.com/google-ads/answer/7438541">External Link</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incrementality</td>
<td>Geo Based</td>
<td>Synthetic Control Group</td>
<td>Open Source</td>
<td><a href="https://arxiv.org/pdf/1506.00356.pdf">Source</a>, <a href="http://google.github.io/CausalImpact/">Source</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incrementality</td>
<td>Geo Based</td>
<td>Geo Experiment (GBR)</td>
<td>Open Source</td>
<td><a href="https://research.google/pubs/pub38355/">Source</a>, <a href="https://github.com/google/GeoexperimentsResearch">Source</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incrementality</td>
<td>Geo Based</td>
<td>Geo Experiment Time Based (TBR)</td>
<td>Open Source</td>
<td><a href="https://research.google/pubs/pub45950/">Source</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optimization</td>
<td>User Based</td>
<td>Ad Variation</td>
<td>External</td>
<td><a href="https://support.google.com/google-ads/answer/7438541">External Link</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optimization</td>
<td>User Based</td>
<td>Draft &amp; Exp</td>
<td>External</td>
<td><a href="https://support.google.com/google-ads/answer/53197327/single">External Link</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optimization</td>
<td>User Based</td>
<td>Video Exp</td>
<td>External</td>
<td><a href="https://support.google.com/displayvideo/answer/904066?hl=en">External Link</a></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

https://www.boosterboxdigital.com/fos2021/
HOW TO ESTIMATE THE IMPACT OF COVID-19 ON YOUR ONLINE MARKETING CAMPAIGNS

by Alessandro G | Mar 26, 2020 | Analytics, Google Ads News & Insights, PPC Strategy
Incrementality: The Causal Effect of an Ad

Example from “Ghost Ads”: Sporting goods retailer who ran an experiment:
- Retargeting
- 570k users
- 2 weeks
- 9 million impressions
- Ad spend: $30,500
- Avg. CPM = $3.40

Incrementality: The difference in the outcome because the ad was shown; the causal effect of the ad.

Per impression: $100k/9M=$0.011 ⇒ $11 RPM
Optimizing Incrementality via Attribution

30%*$80k/4M ⇒ $6 CPM

30%*$20k/5M ⇒ $1.20 CPM

Never Bid More Than This!

“Outdoor Enthusiasts”

$500k

$580k

$80k

Revenue

Control

Treatment

$520k

$500k

$20k

Revenue

Control

Treatment

NOT “Outdoor Enthusiasts”
3 Approaches

A. Lift

B. Geo Testing

C. MMM (Marketing Mix Modeling)
Old tool
**Figure 5:** Example of media funnel effects on sales.
What’s the difference between MMM and the rest?

1. MTA assumes we know everything about the user path (all the clicks & impressions). Bottom Up.
Limitations

- Selection bias
- Limited amount of data
- Correlated input variables
- Does not answer to 'what happens if I cease my ad spend?'
Guess who’s going all in on it?
FB going all in on MMM (and reinventing it)

- https://facebookexperimental.github.io/Robyn/
Contemporary MMM combines benefits of MMM, Attribution and advanced machine learning methods.

Classic MMM:
- Aggregate Inputs: Offline and Online
- Hand made, analyst bias, cumbersome, slow
- One time
- Strategic output

Classic Attribution:
- Individual / Log-level Journeys: Online only
- Automated Machine Learning supported feature selection
- Calibrated
- Always on
- Tactical choices

Contemporary MMM:
- Aggregate but granular information
- Offline and Online
- Limited Visibility into Customer Activity
- Ecosystem & Policy Changes

Contemporary MMM benefits:
- Machine Learning Supported feature selection
- Increased Automation
- Minimized analyst bias
- Faster & More sensitive Calibrated
- Always on Balance of tactical and strategic outputs
“Talk is cheap. Show me the code.”

Linus Torvalds
3 options

- SapientNitro - ❤️
  https://github.com/rkthakur/mediamixmodeling

- Guang Fei - ❤️❤️
  https://github.com/Guangfei0/Market-Mix-Modeling

- ThirdLove - ❤️❤️❤️
  https://github.com/mecommerce/ThirdLove-Tech-Blog
So let’s take a step back and...
Want to improve your measurement? Get a grip on incrementality

Avinash Kaushik / January 2021
3 approaches

A. Lift → Channel-silo incrementality
3 approaches

A. Lift → Channel-silo incrementality

B. Geo testing → Cross-stack incrementality
3 approaches

A. Lift → Channel-silo incrementality

B. Geo testing → Cross-stack incrementality

C. MMM (Marketing Mix Modeling) → When testing the entire marketing activity
Wait...there is another way
A potential theory of everything? UMA unified marketing mix

- Run geo testing to estimate impact of channel(s)

- Use them to calibrate Contemporary MMM to allocate the impact of the Mix

- Use MMM to feed Adv platforms and run campaigns leveraging 1st party MTA (Data Driven)
A lot of science, data analysis, modeling...
We are going to become modeling agencies
Incrementality APOCALYPSE: AN INCREMENTALITY SURVIVAL KIT

Gianluca Binelli

BOOSTER BOX
Want to know more about incrementality?

- People to follow on Twitter: @Mike_Kaminsky, @hammer_mt, @weird_ceo, @lfiaschi86, @MackGrenfell, @Leoubb


- https://projectrobynmmsummit2021.splashthat.com/