

Text analysis

MARKETING ANALYTICS FOR BUSINESS



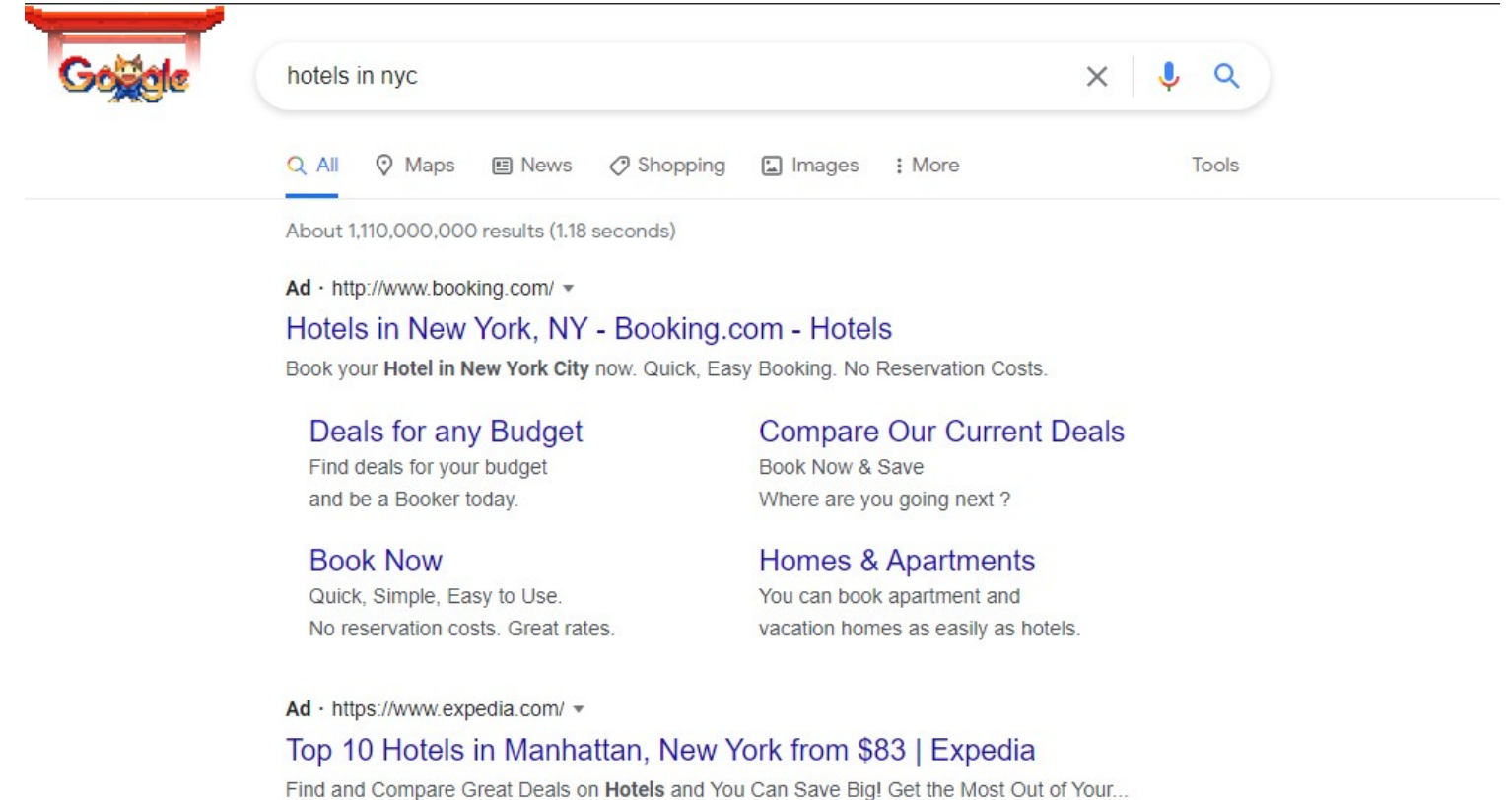
Sarah DeAtley

Principal Data Scientist

Text analytics basics

Text analytics: turning unstructured text data into quantitative insights

- Marketing contains text in most ads:
 - Paid search ads are text-based
 - Social media comments are user-generated text
 - Radio and TV ad messages can be treated as text
- Text analytics can be within a channel, campaign, or across the entire marketing program



Paid search keywords

Branded keyword



"new Coke flavors"

- Non-branded keywords are more expensive because they are highly desirable
- Branded keywords are high volume for well-known brands

Keywords: terms entered in search engines

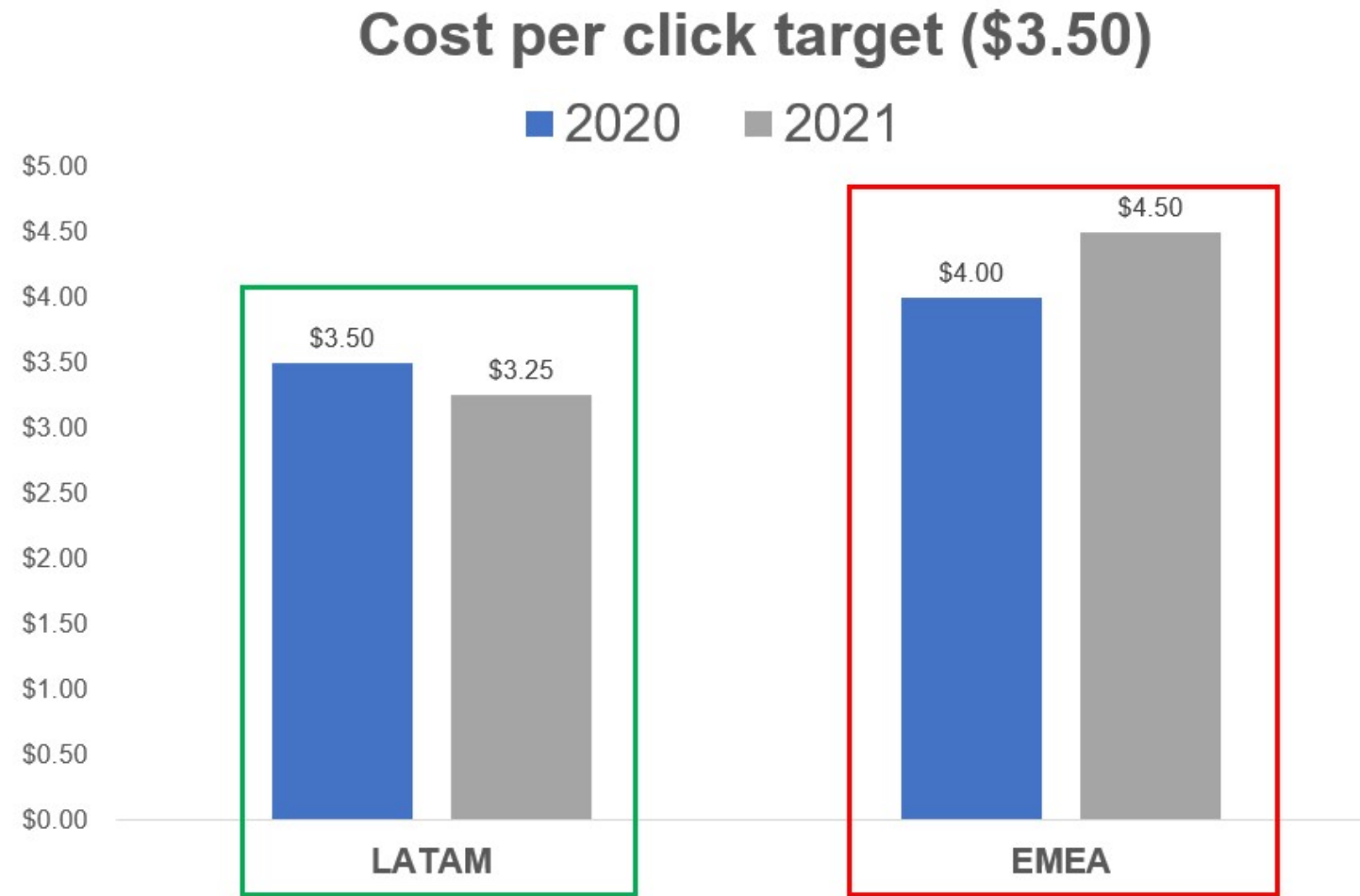
- Marketers spend by keyword, so ads appear in search results
- Keywords are **branded** (brand name), or **non-branded** (no brand name)

Non-branded keyword



"12-pack of soda"

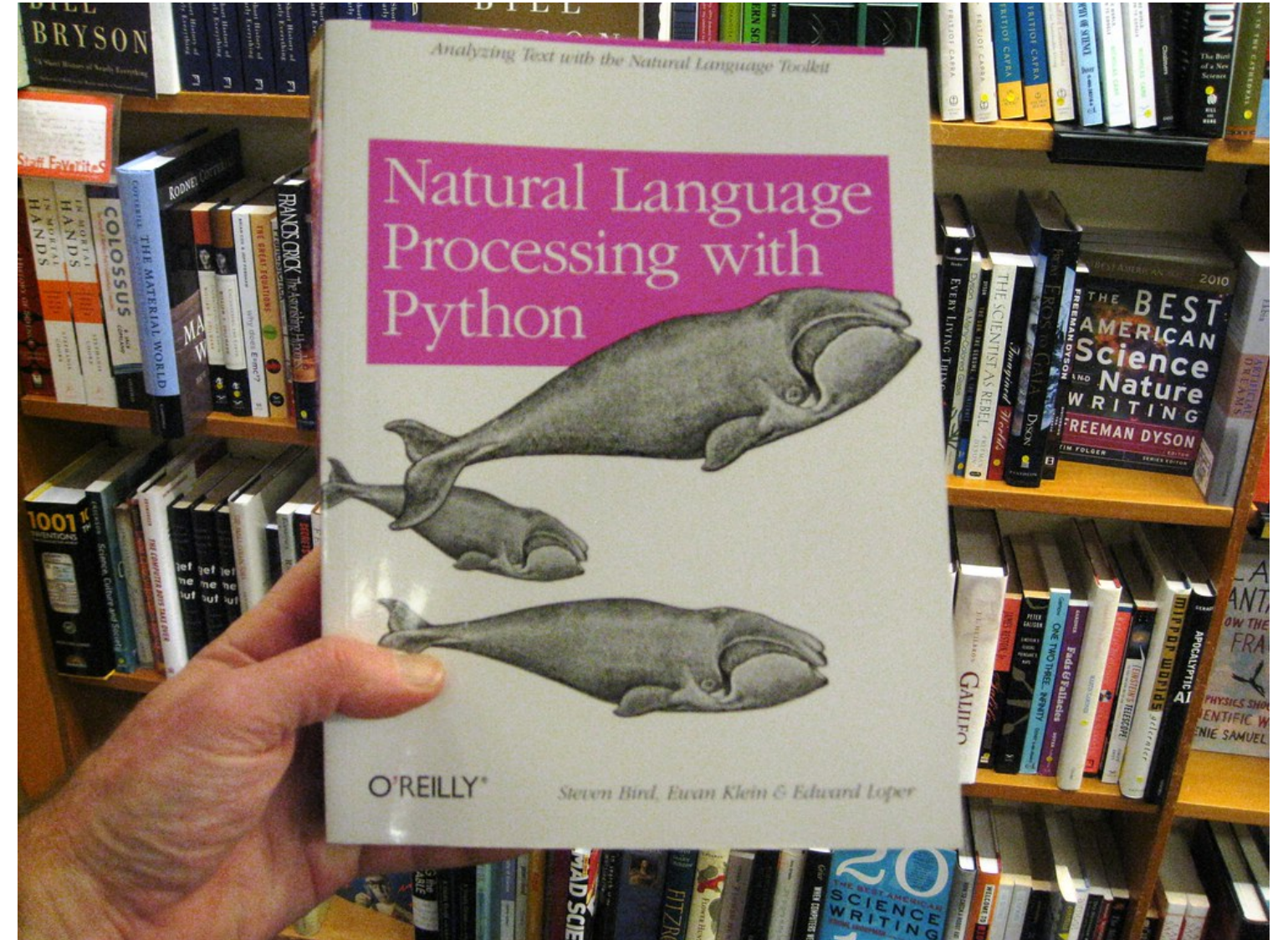
Paid search analysis



- Paid Search marketers set targets by cost per click
 - $\text{Cost per click (CPC)} = \frac{\text{Total keyword cost}}{\text{total keyword clicks}}$
- Analysts compare keyword performance across many dimensions
- Evaluate target cost by metadata
- Identify where cost changes over time!

Cross-channel text analysis

- Marketers want text categorized for all channels
 - Can group manually in a small dataset
 - Use natural language processing (NLP) with large data
- **NLP:** using a computer to understand language as it is spoken and written
- NLP scales across keywords and other text
- NLP accommodates spelling mistakes and multiple languages



¹ Brewbooks on flickr

Let's practice!

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Sentiment analysis

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Sentiment analysis basics



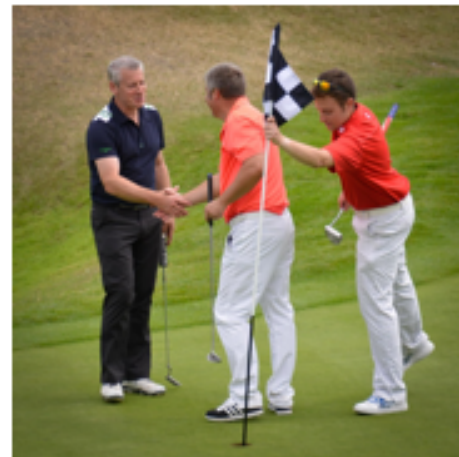
- Brands advertise on social media platforms like Twitter, Instagram, and Facebook
- One way to monitor social media health is through sentiment analysis

Sentiment analysis: technique to determine if data is positive, negative, or neutral

¹ athree23 from Pixabay

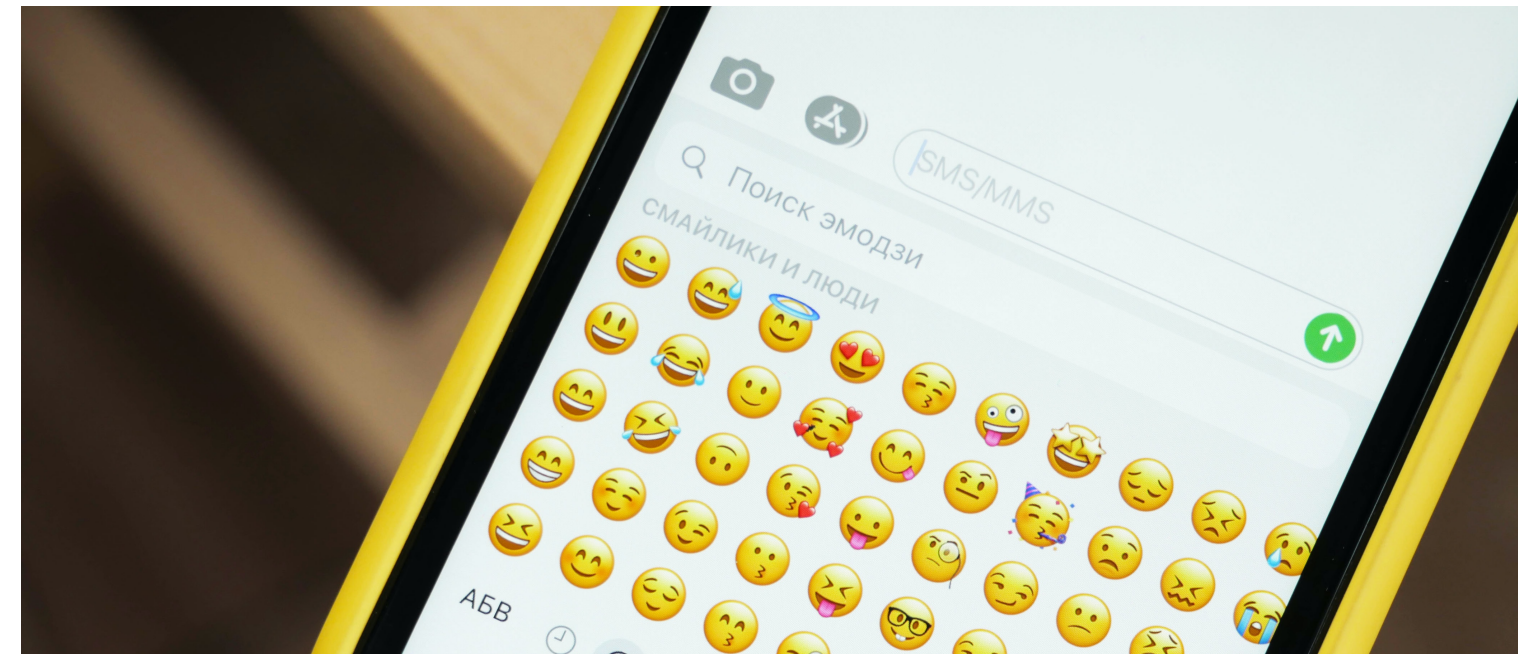
Sentiment complexity

- Sentiment is subjective! Brands want to monitor in real-time
- Context is key:
 - "Well done" in sports has a different meaning than in restaurants



"well done"

- Sentiment can be more than positive, negative, or neutral:
 - Angry, happy, or sad
 - Urgent or non-urgent
- Also consider emojis and sarcasm



¹ Denis Cherkashin on Unsplash

Sentiment model types

- *Manual*: analyst applies rules to data
- *Automatic*: NLP automatically determines sentiment
- Evaluate level of complexity and data size:
 - Automatic for large data sets with multiple languages
 - Manual for ease of interpretation with smaller data
- Manual rules can train automatic NLP models (hybrid approach)



¹ mohamed Hassan from Pixabay

NLP model options



- **NLP model options:**
 - Out-of-the-box model with NLP sentiment
 - Build and maintain in-house NLP sentiment model
- Still learning about NLP? Start with out-of-the-box model
- Experience training NLP models? In-house has more flexibility
- Consider long term reporting needs with both options!

¹ Carlos Muza on Unsplash

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Audience segmentation

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Audience segmentation basics



Audience segmentation: identifying groups within an audience to deliver tailored marketing

- Marketers want to create relevant messages for segments
- Making messages relevant is easier with smaller groups
- Marketing Analysts identify the best way to group customers

Segmentation data types

- Many different ways to segment audiences:
 - **Demographics** (age, geography, gender)
 - **Psychographics** (values, opinions, lifestyle)
 - **Behavioral data** (engages with ads, abandons shopping cart)
- Segments can be very granular; check that marketers can reach a segment

Demographics



Psychographics



Behavioral data



Cluster analysis

- Sometimes need complex segments using a combination of many attributes

Cluster analysis: statistical model where data in a group (cluster) is more similar than data in other groups (clusters)

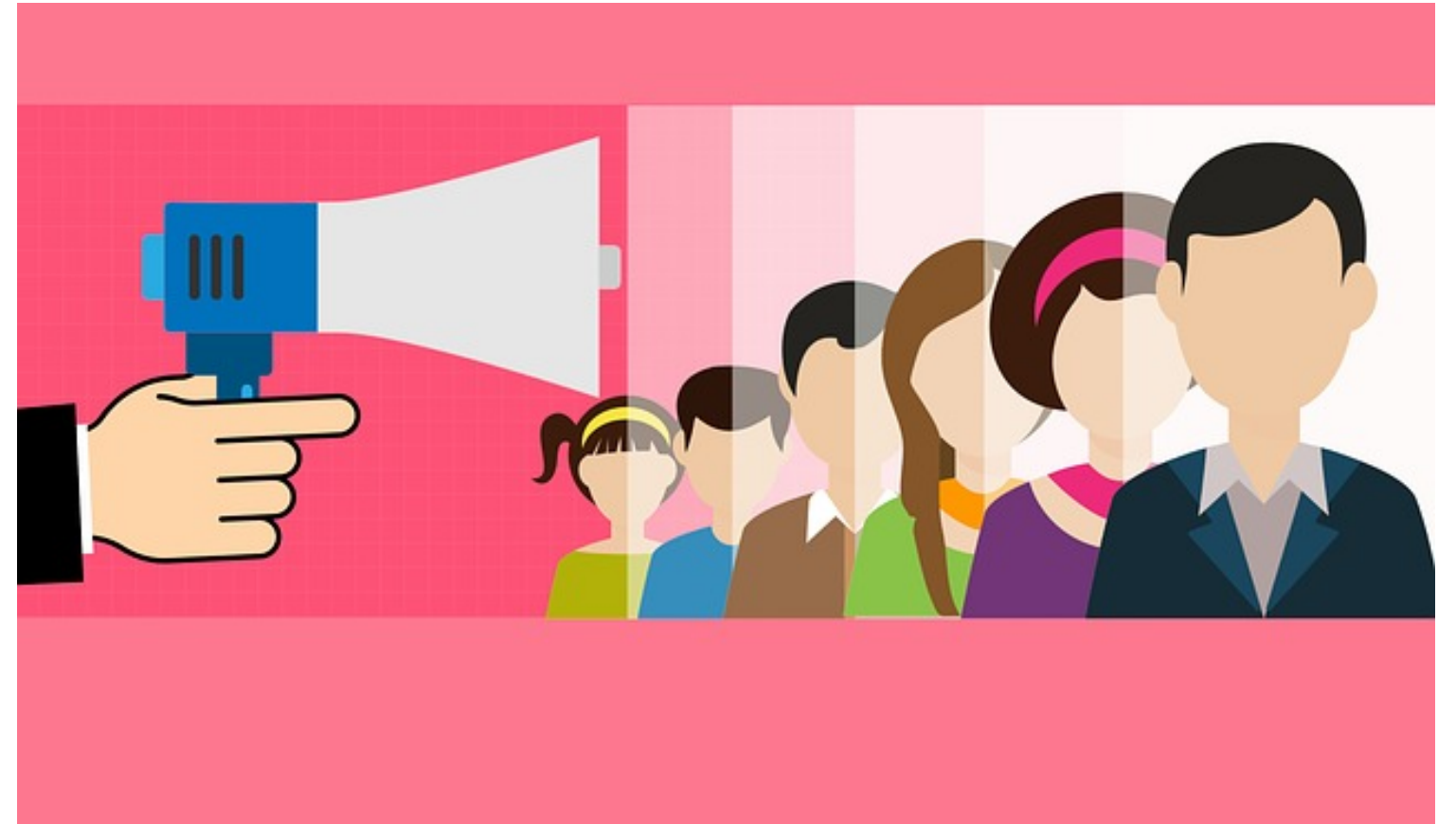
- Automatically groups data, but analyst determines how many clusters are needed
- Analysts can look for common themes in clusters (like business product affinity)



¹ "20111214-NodeXL-Twitter-User jowyang network graph no jowyang edges" by Marc_Smith

Audience targeting

- Marketers can scale segment definitions across channels and campaigns
- DSPs and DMPs manage segment definitions
 - Enable retargeting and look-alike model tactics



¹ mohamed Hassan from Pixabay

Retargeting and look-alike modeling

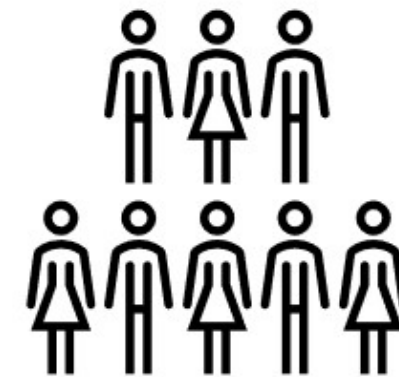
Retargeting: target audiences based on behavioral segments

Retargeting



Look-alike models: target large audiences with similar characteristics to segments

Look-alike modeling



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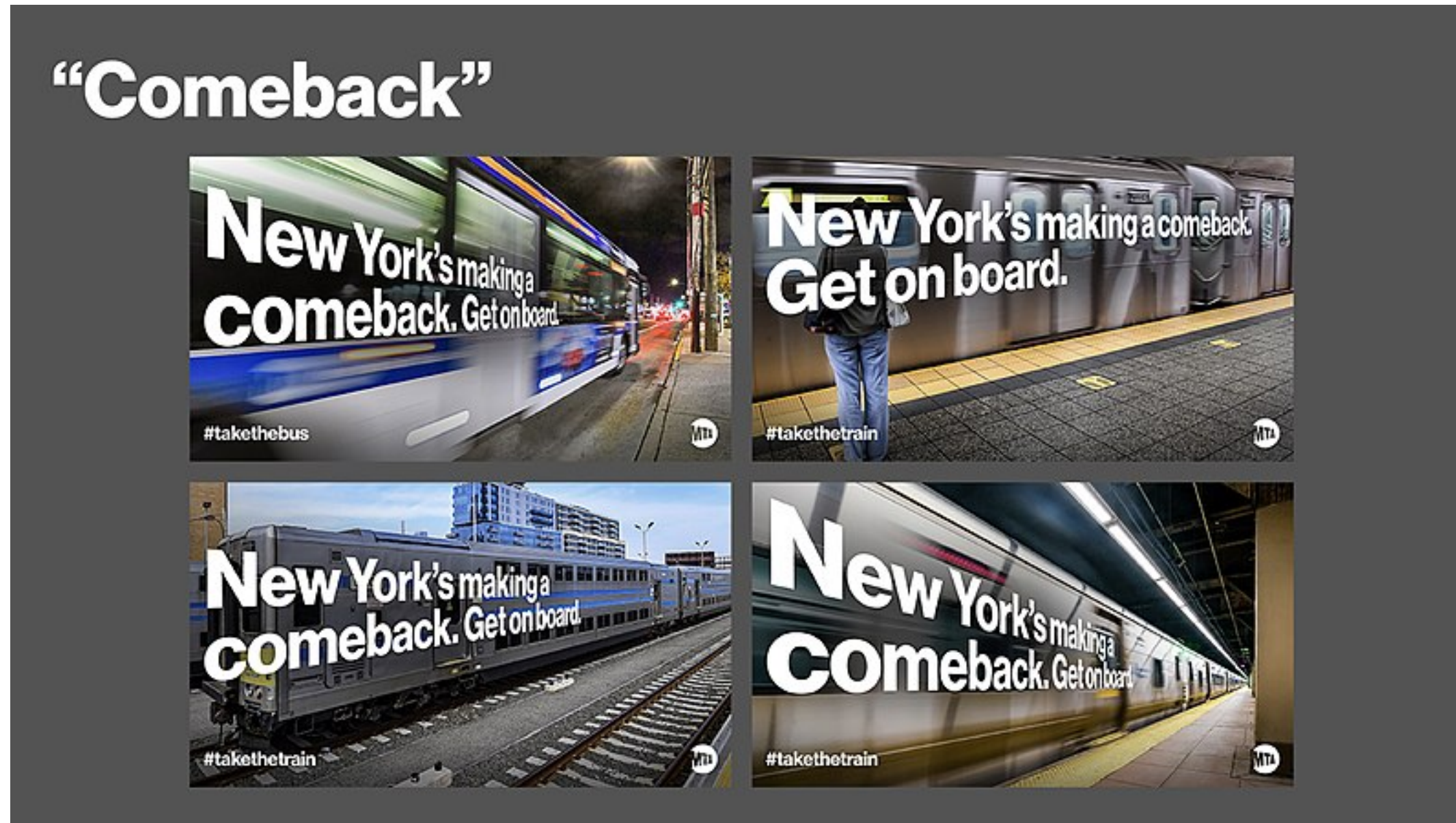
Integrated campaigns

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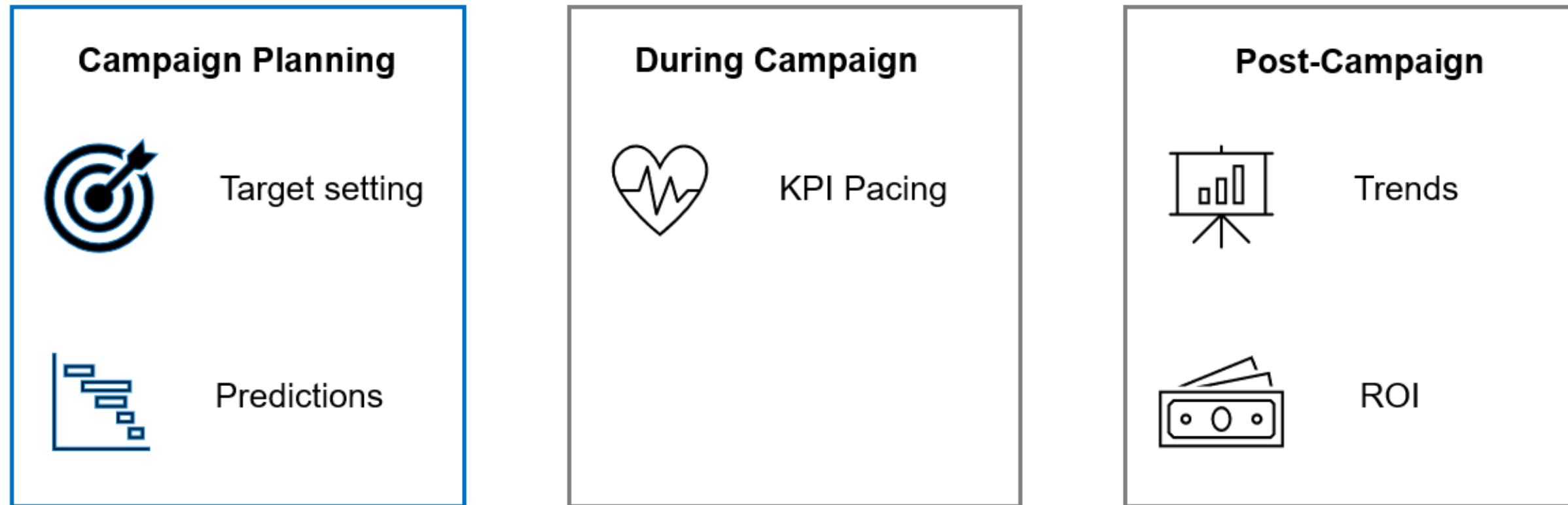
What are integrated marketing campaigns?



¹ TakeTheTrain-TakeTheBus Campaign via Metropolitan Transportation Authority

Integrated campaign stages

- Integrated marketing is complex and expensive
- **Before** campaign conduct **predictive modeling** and set **targets** for channels
- **During** campaign monitor KPIs against **pacing** to targets
- **After** campaign perform **ROI** analysis and summarize cross-channel **trends**



Campaign planning: audience segmentation



"Who should we be targeting in a discount campaign?"



Possible segments:

- Is this for new or existing customers?
- Is this for specific geographies?
- Are we targeting certain age groups?
- Does this apply only to certain products?

Campaign planning: response models

"Which segments are most likely to purchase with a discount offer?"



- **Response model:** relationship between offer (discount) and outcome (purchase probability)
- Use statistical hypothesis tests or regression modeling

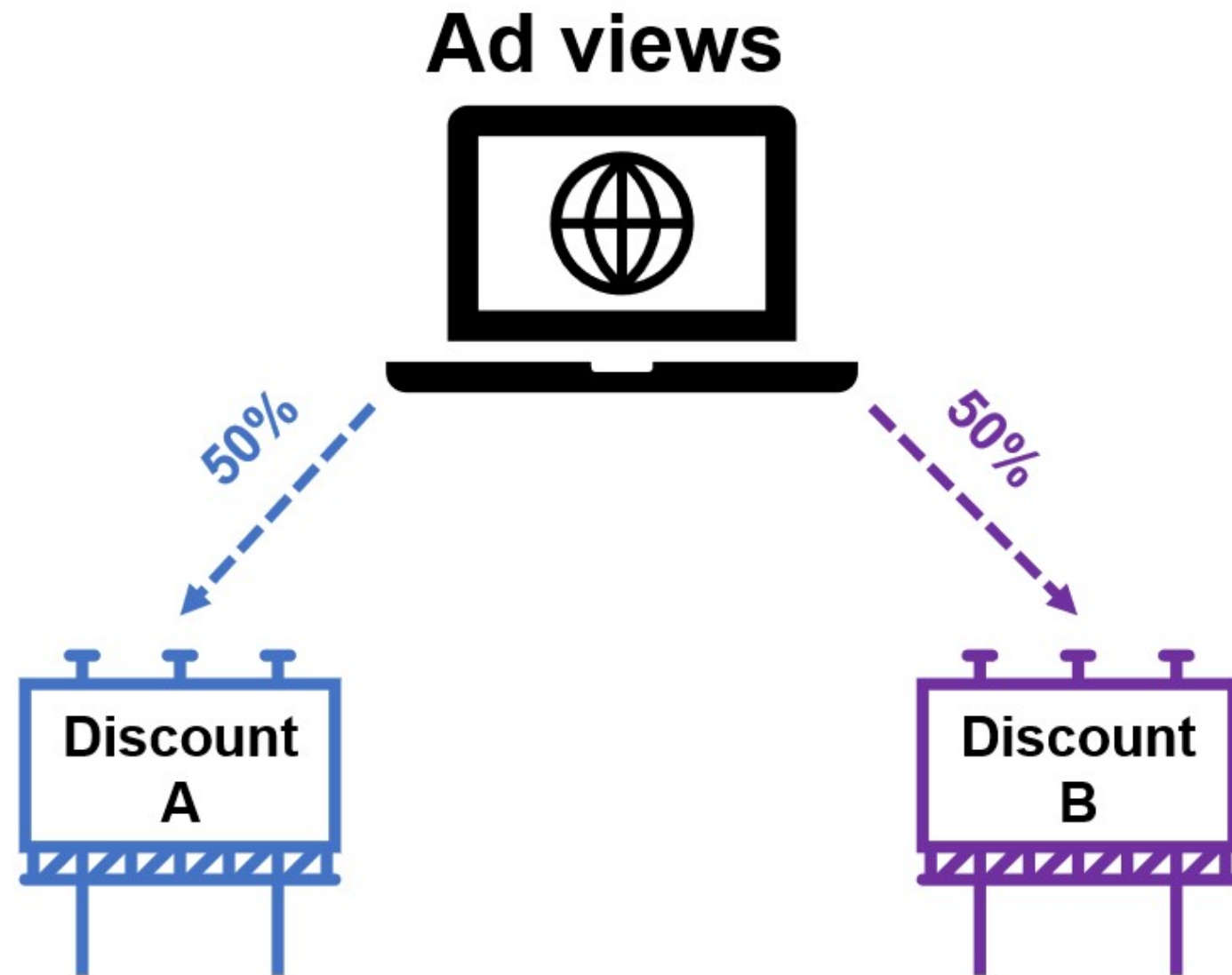
Campaign planning: choice models

"What type of discount message will be most effective?"

- Recommend discount messaging, limitations, and value propositions
- **Choice model:** influence of offer attributes (like discount type within promotional messaging) on purchase
- Usually regression modeling

Campaign Offer Attribute	% of Purchase Choice Explained
Urgency (limited time offer)	20%
Amount (% off)	50%
Bundling (multiple products with discount)	5%
Special financing (delayed payment)	10%
Amount + Urgency (interaction)	65%

Campaign planning: experimentation



"Can we run this campaign as an experiment?"

- A/B testing not always possible with integrated marketing
- Consider expense of experimentation
- Causal inference uses statistical models to simulate marketing campaigns

Let's practice!

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