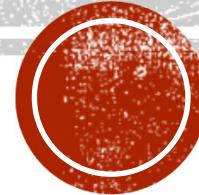


SEARCH ENGINE MARKETING

PROF. XINXIN LI



WHY IS SEARCH ENGINE SUCH A BIG DEAL?

Over 93% of people's online experiences begin with a search engine?

93%

Or that 72% of computer searches & 92% of mobile searches come through Google?
That's over 65k searches every second!

92%

65K 72%

Did you also know that 75% of Google search users never even scroll past the first page of results? That means if you aren't in the top 10, you don't exist to 75% of your potential customers! That's madness!

75%

Even more harrowing - over 40% of all clicks from Google searches are for one of the top four results!

40%

SAMPLE GOOGLE SEARCH RESULT

Google

cruise to canada

All Images Maps News Shopping More Settings Tools

About 509,000,000 results (0.97 seconds)

Expedia Cruises | Cruises to Canada
Ad www.expedia.com/Cruises/Canada ▾
Find the Lowest Prices on **Cruises to Canada**. Shop Today for the Best Rates! Shop Expedia Cruises & Save with Our Best Price Guarantee. Book Your **Canada Cruise** Today! 4,000 Cruises Worldwide. Best Price Guaranteed. Luxury **Cruises** Available.

Special Cruise Offers
Expedia's Top Deals and Last Minute Offers. Find Your Cruise Deal Now!

First Time Cruiser?
Check Out Our Guide To Cruising. Learn Why to Book With Expedia.

2020 Canada Cruises 75% Off | 2020 Canada Cruises on Sale
Ad www.canadacruse.com/ ▾
Save up to 75% on 2020 **Canada cruises**. Best price & service guarantee! 600+ **Cruise** Specialists. Best Price Guarantee. Over 8 Million Customers. Save up to 75% Today. Huge Last-Minute Specials. World's Top **Cruise** Agency. New Discounts Daily.
Hot Deals on Norwegian · Princess up to 75% Off · Save on Royal Caribbean

Canada Cruises: Explore Mesmerizing Canada | Royal ...
<https://www.royalcaribbean.com> › canada-cruises ▾
Cruise to **Canada** and pull on your hiking boots and head up pristine peaks like Grouse Mountain outside Vancouver. Or set your sights to Canada's east and ...
10 Night Canada & New ... · Halifax, Nova Scotia · Charlottetown, Prince Edward ...

Canada and New England Cruises | Norwegian Cruise Line
<https://www.ncl.com> › Cruise destinations ▾
On your **Canada** and New England **cruises**, sight-see along the coast and experience the fall foliage. Check out east coast 10-day and 7-day **cruises**.

Sponsored Ads

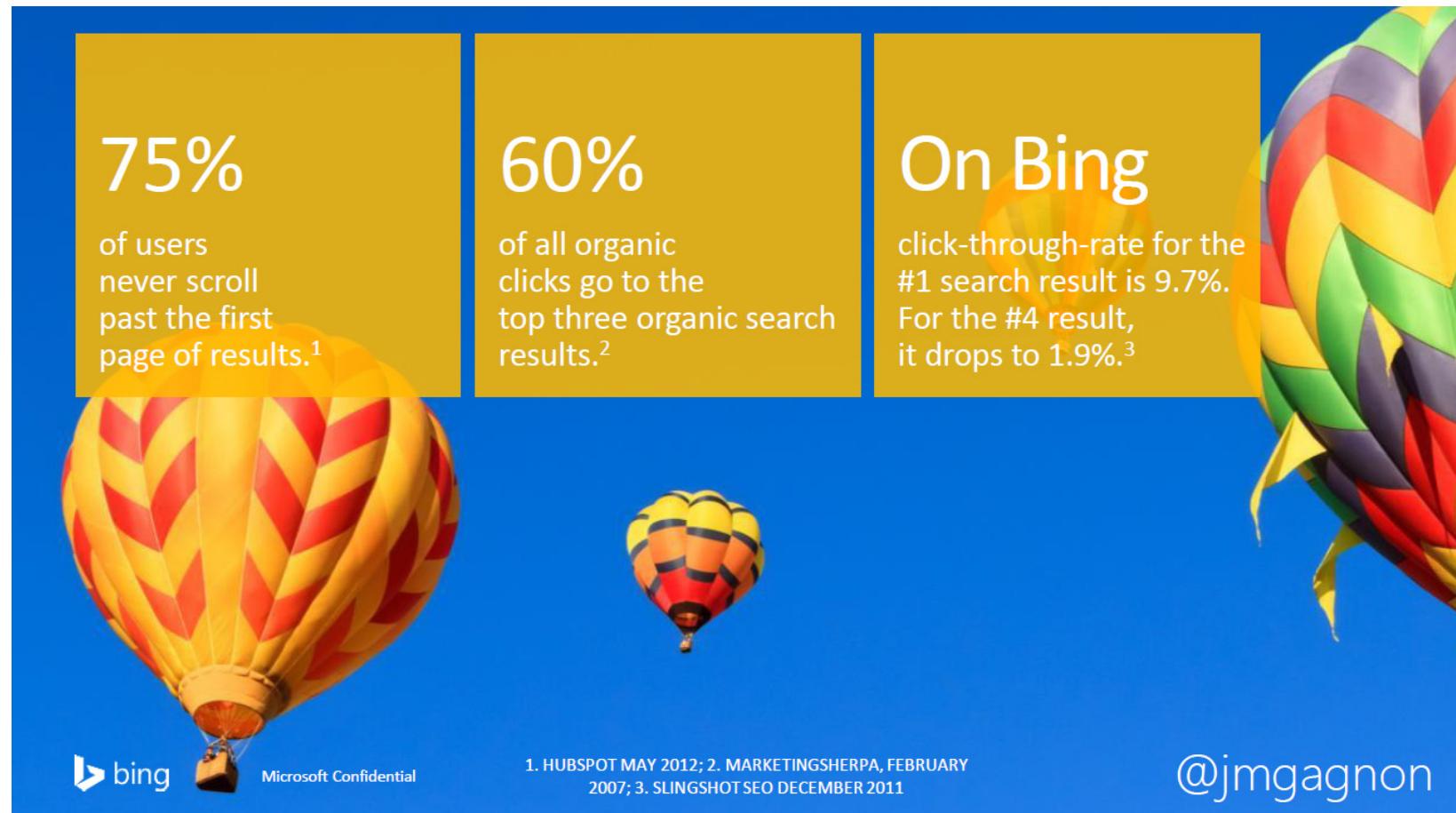
Organic Search Results

SEARCH ENGINE ANALYTICS

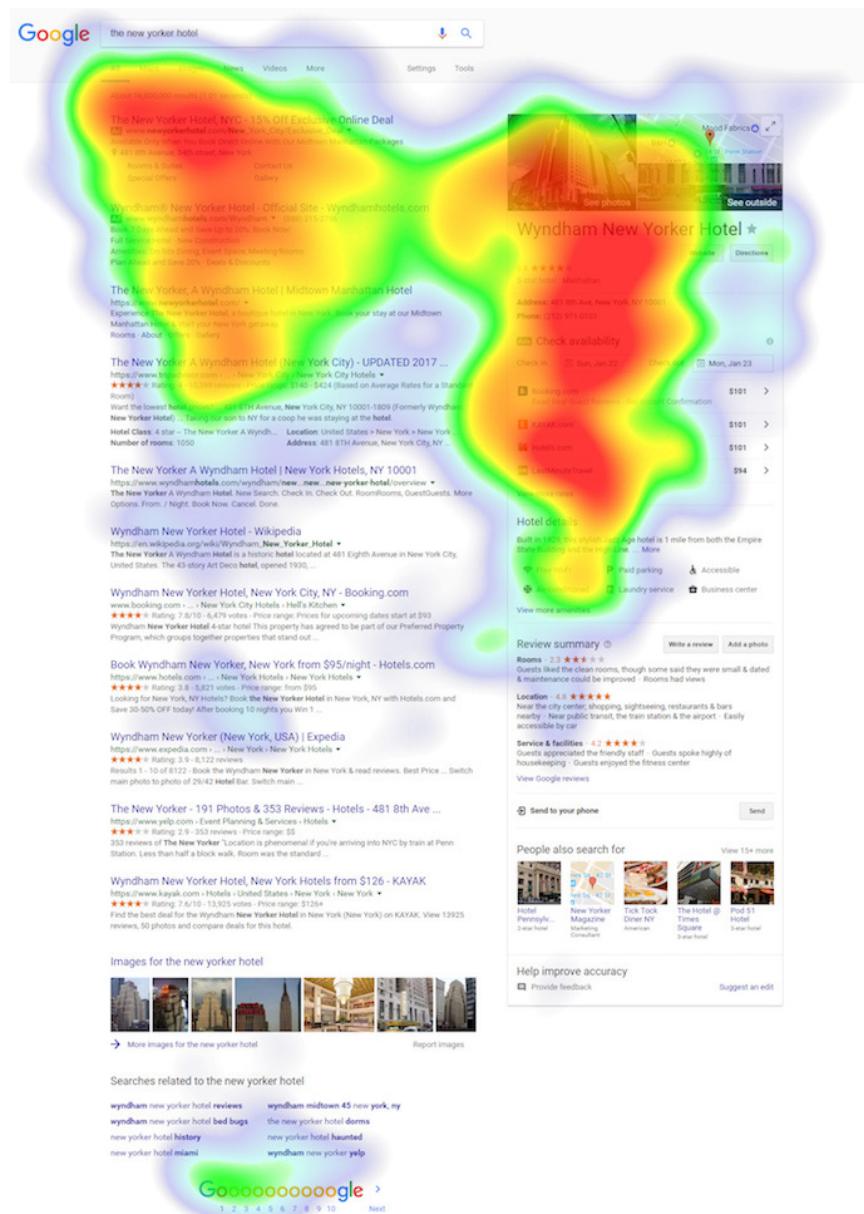
- **Search Engine Marketing (SEM)**
 - Optimize search engine marketing campaigns
- **Search Engine Optimization (SEO)**
 - Optimize organic result ranking on search engines
- Two important questions:
 - How do you design your ad campaign to attract right customers to your site and increase ROI (return on investment)?
 - How do you make your website relevant and visible to the right customers given millions of web pages out there?

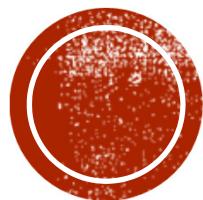
WHY IS SEM/SEO SUCH A BIG DEAL?

- Search Engine Marketing (SEM) and Search Engine Optimization (SEO) have one common goal: to move websites to the top of the search results page



HEAT MAP OF GOOGLE SEARCH RESULTS

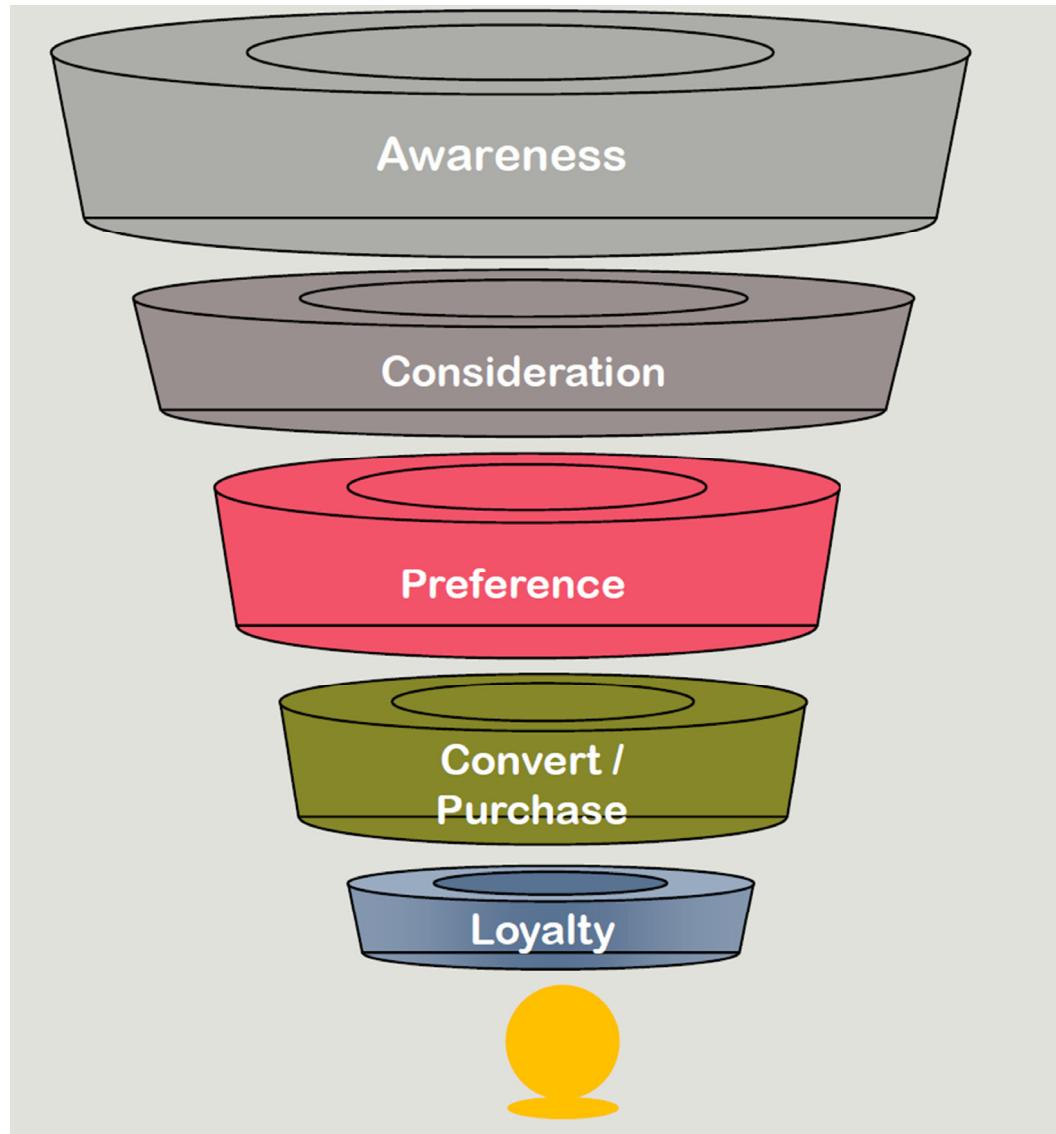




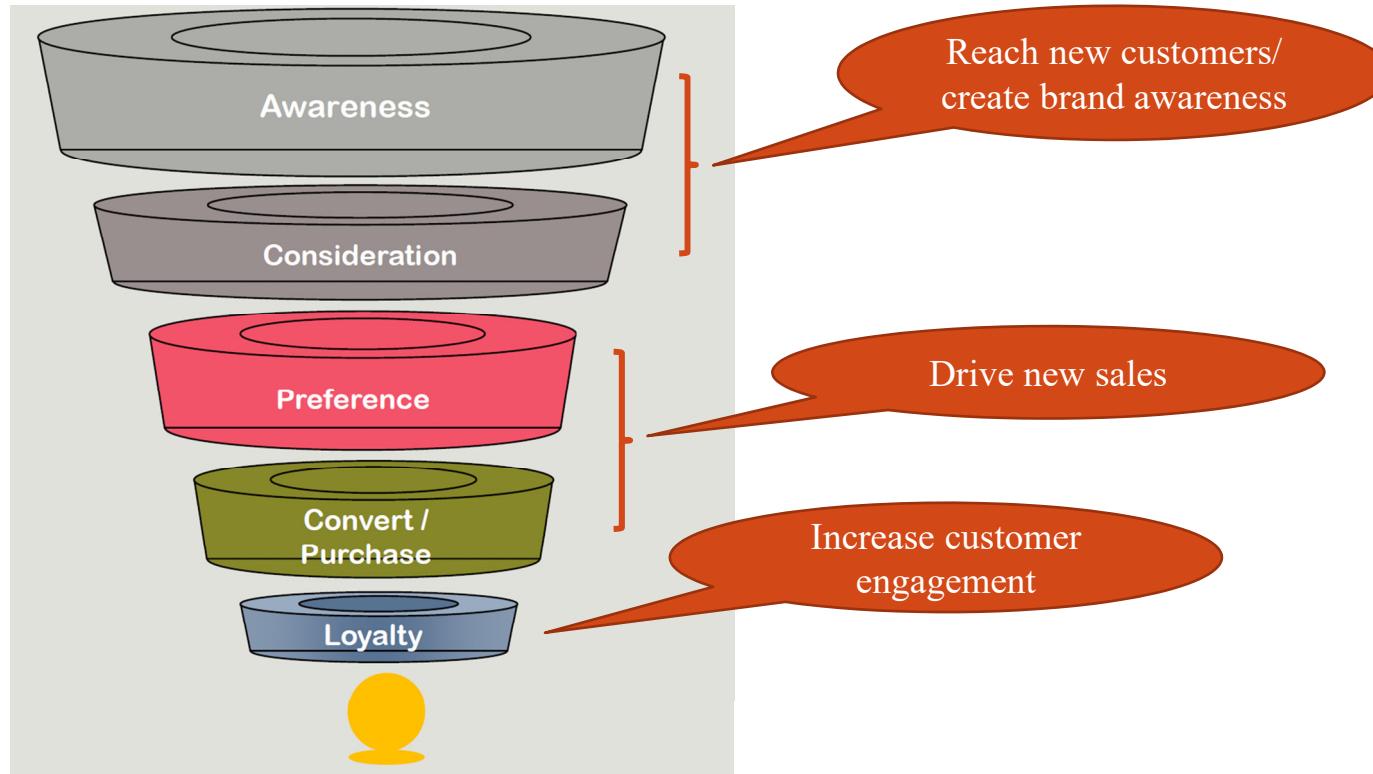
I. CUSTOMER JOURNEY



CUSTOMER JOURNEY

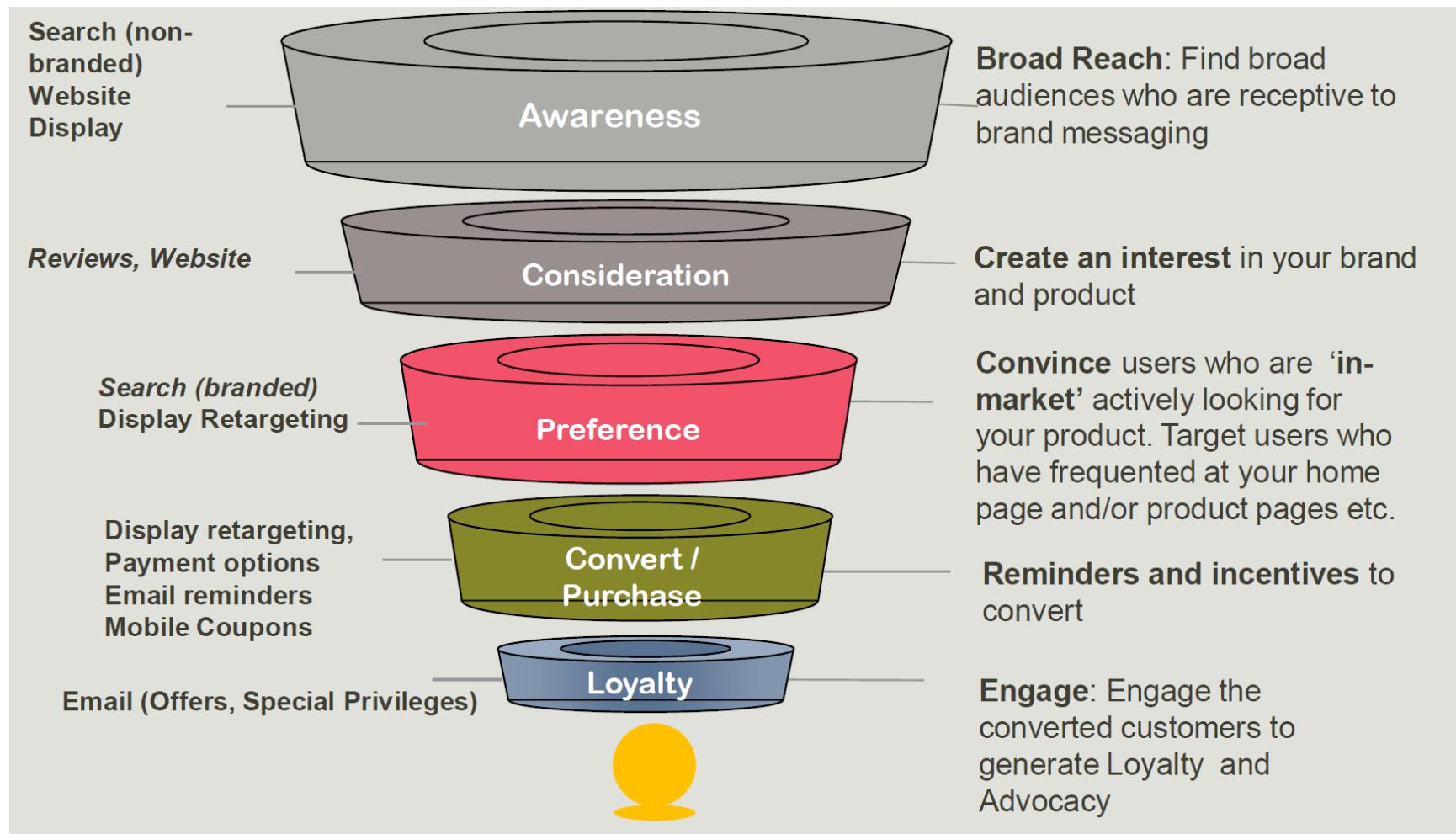


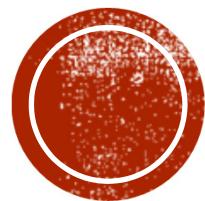
MAPPING THE OBJECTIVES TO THE CUSTOMER JOURNEY



- Either increase efficiency of a stage (direct approach)
 - or
- Increase number of customers getting to a stage (indirect approach)

CUSTOMER JOURNEY – CHOICE OF DIGITAL MEDIA





II. SEARCH ENGINE MARKETING (SEM)

HOW DO SEARCH ADS WORK?



GET STARTED WITH GOOGLE ADS

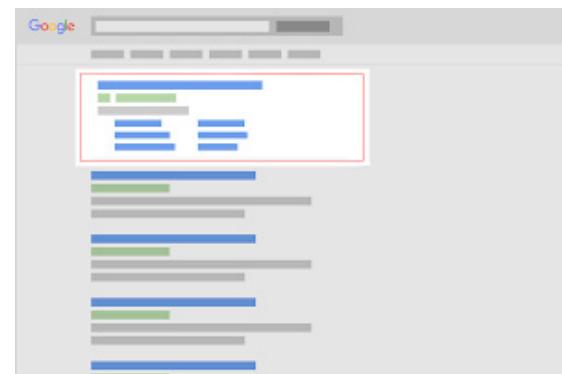


- <https://www.youtube.com/user/learnwithgoogle>

WHERE DO ADS SHOW?

▪ Search Network

- **Google search sites:** Ads can appear above or below search results on Google Search. They can appear beside, above, or below search results on Google Play, Google Shopping, and Google Maps, including the Maps app.
- **Search partners:** Ads might appear with search results on websites of Google search partners. For text ads, search partners include hundreds of non-Google websites, as well as Google Video, and other Google sites.



▪ Display Network

- Your text, image, and video ads can appear on the **Google display network**, which is a collection of websites—including specific Google websites like Google Finance, Gmail, Blogger, and YouTube—that show ads.



GOOGLE ADS ON GOOGLE SEARCH

Google search results for "cruise to canada". The search bar shows "cruise to canada". Below it, the navigation bar includes "All", "Images", "Maps", "News", "Shopping", "More", "Settings", and "Tools". A message indicates "About 509,000,000 results (0.97 seconds)".

Google Ads

Expedia Cruises | Cruises to Canada
Ad www.expedia.com/Cruises/Canada ▾
Find the Lowest Prices on **Cruises to Canada**. Shop Today for the Best Rates! Shop Expedia Cruises & Save with Our Best Price Guarantee. Book Your **Canada Cruise** Today! 4,000 Cruises Worldwide. Best Price Guaranteed. Luxury **Cruises** Available.

Special Cruise Offers
Expedia's Top Deals and Last Minute Offers. Find Your Cruise Deal Now!

First Time Cruiser?
Check Out Our Guide To Cruising. Learn Why to Book With Expedia.

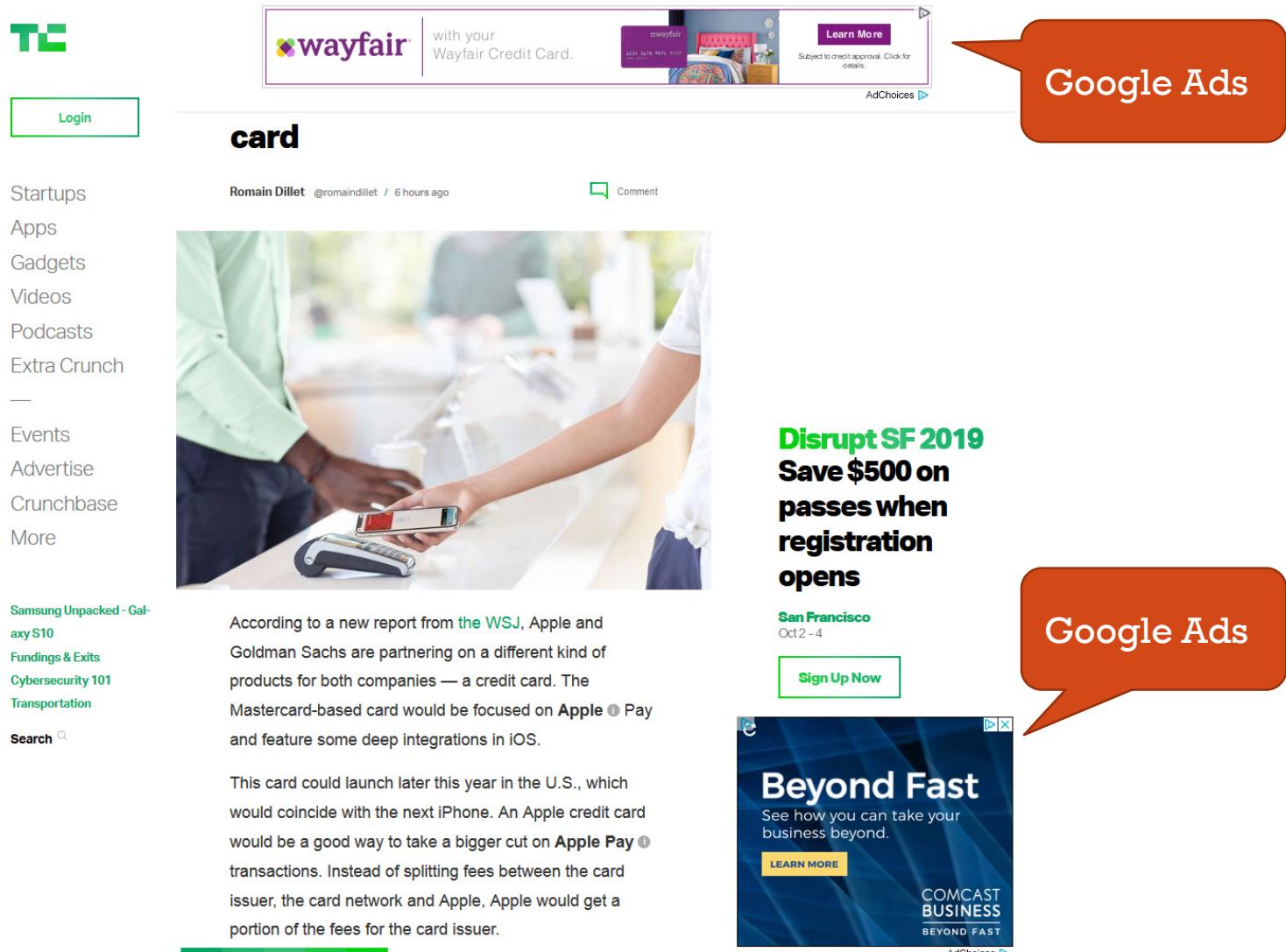
Google Ads

2020 Canada Cruises 75% Off | 2020 Canada Cruises on Sale
Ad www.canadacruse.com/ ▾
Save up to 75% on 2020 **Canada cruises**. Best price & service guarantee! 600+ **Cruise** Specialists. Best Price Guarantee. Over 8 Million Customers. Save up to 75% Today. Huge Last-Minute Specials. World's Top **Cruise** Agency. New Discounts Daily.
Hot Deals on Norwegian · Princess up to 75% Off · Save on Royal Caribbean

Canada Cruises: Explore Mesmerizing Canada | Royal ...
<https://www.royalcaribbean.com> › **canada-cruises** ▾
Cruise to **Canada** and pull on your hiking boots and head up pristine peaks like Grouse Mountain outside Vancouver. Or set your sights to Canada's east and ...
10 Night Canada & New ... · Halifax, Nova Scotia · Charlottetown, Prince Edward ...

Canada and New England Cruises | Norwegian Cruise Line
<https://www.ncl.com> › **Cruise destinations** ▾
On your **Canada** and New England **cruises**, sight-see along the coast and experience the fall foliage. Check out east coast 10-day and 7-day **cruises**.

GOOGLE ADS ON GOOGLE DISPLAY NETWORK



The screenshot shows a TechCrunch article about a new credit card. At the top, there's a Wayfair advertisement for a credit card. A red speech bubble on the right side points to this ad with the text "Google Ads". Below the ad, the TechCrunch article title is "card" and the author is Romain Dillet (@romaindillet) from 6 hours ago. The article discusses a new credit card partnership between Apple and Goldman Sachs. It includes a photo of a payment transaction and several paragraphs of text. To the right of the article, there's another red speech bubble pointing to a Comcast Business advertisement with the text "Google Ads".

TC

Login

card

Romain Dillet @romaindillet 6 hours ago Comment

Startups
Apps
Gadgets
Videos
Podcasts
Extra Crunch

Events
Advertise
Crunchbase
More

Samsung Unpacked - Galaxy S10
Fundings & Exits
Cybersecurity 101
Transportation

Search 

wayfair with your Wayfair Credit Card.

Learn More Subject to credit approval. Click for details.

AdChoices

Disrupt SF 2019
Save \$500 on passes when registration opens

San Francisco Oct 2 - 4

Sign Up Now

Beyond Fast
See how you can take your business beyond.

LEARN MORE

COMCAST BUSINESS BEYOND FAST

AdChoices

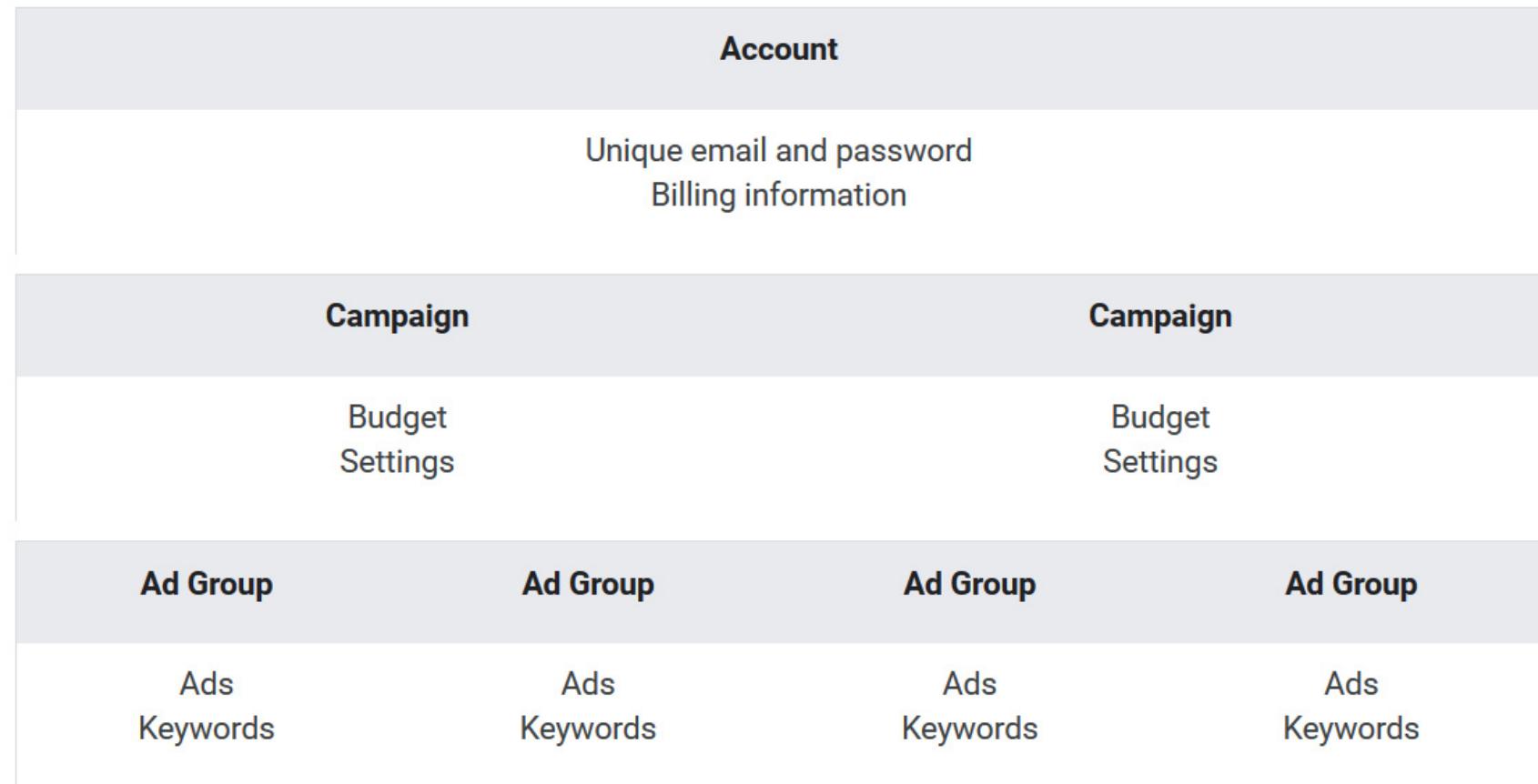
Google Ads

Google Ads

TERMINOLOGIES

- **Keywords** : Words or phrases people use when searching online that triggers the display of your ad copy
- **Impression**: The display of your ad for one time to one user
- **Click**: The action of a user clicking on your ad
- **CTR**: Click Through Rate – percentage of clicks to impressions

HOW GOOGLE ADS IS ORGANIZED



AN EXAMPLE

Campaign

\$500/day

Shoes

\$300/day

Shirts

\$200/day

Ad Group

Tennis Shoes

Walking Shoes

Polo Shirts

Keywords

tennis shoes
best tennis shoes
shoes for tennis
red tennis shoes

walking shoes
black walking shoes
mens walking shoes
walking shoes for women

red polo shirt
golf polo shirt
polo shirt for golf
button down polo shirt

Ad Copy

Tennis Shoes

Shop the Largest Selection of
Tennis Shoes. Free Shipping!
www.website.com/tennis-shoes

Walking Shoes

Shop the Largest Selection of
Waling Shoes. Free Shipping!
www.website.com/walking-shoes

Polo Shirt

Shop for Lacoste Polo Shirts.
25% Off Sales & Free Shipping!
www.website.com/walking-shoes

STRUCTURE YOUR CAMPAIGNS BASED ON...

▪ Unit of organization

- customer segment (related to keyword themes)
 - e.g. all keywords related to “hotel booking” in one campaign and those related to locations (e.g. London) in another campaign
- semantic similarity of keywords
 - e.g. one campaign on “shoes” and another on “footwear”
- product lines/services
 - e.g. one campaign for “camera” and another for “printers”
- brands
 - e.g. an online retailer doing one campaign for “Nike” and another for “Adidas”

▪ Controlled features

- geographic targeting
 - e.g. want to monitor performance of same keywords in Hartford vs. Boston
- network targeting
 - e.g. when you want to set the bid on a keyword to be different in the search vs. display network, likely because customer intent is clearer in search (so conversion rate may be higher), or customers coming from search network and display network may belong to different segments (so conversion margins may differ)

GET THE CAMPAIGN GOING IN SEM

1. Select keywords

Cruise to Caribbean, all inclusive cruise
vacations, Caribbean vacations, cheap cruise
vacations

2. Create ad copies

All Ocean View Cabins | Cruise to Caribbean
Ad www.windstarcruises.com/ ▾
Cruises For Those Who Seek A More Authentic Way To Travel And Experience World Cultures. Official
Cruise Line Of The James Beard Foundation means Food From The Best Chefs in USA.

Caribbean Cruises
Skip The Crowds & Sail
The Caribbean in Luxury

Request A Call
We're Here To Answer Your Questions
& Help Plan Your Windstar Vacation.

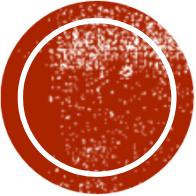
3. Link to landing page

Carnival® Caribbean Cruise | Get The Lowest Price Guarantee
Ad www.carnival.com/ ▾
Beautiful Destination Seeks Fun Traveler. Book Your Caribbean Cruise Today!
Cruise To Cuba - Introducing Mardi Gras™



4. Bid on keywords





II.1. KEYWORD SELECTION



KEYWORD SELECTION AND USER SEARCH INTENT

Navigational

- The intent is to reach a particular site.
- Examples:
 - “Instagram”
 - “Capital One log in”
 - “UConn web site”

Branded Keyword;
May have a
transactional intent

Informational

- The intent is to acquire information from one or more web pages
- Examples
 - “signs of flu”
 - “web analytics”
 - “Storrs house prices”



Why bid on branded keywords?

Transactional

- The intent is to perform some web-mediated activity.
- Examples
 - “get insurance quotes”
 - “buy monitors”
 - “subscribe to wall street journal”

A clear transactional intent – highest ROI expected

MATCH THE ADVERTISING GOALS

- Direct response (sales / leads & sign-ups) → gain clicks where the user will buy
 - Focus on “purchase” stage of customer journey
 - Use unambiguous keywords
 - Action driven ad text
 - Deep link to specific landing page
 - Base bidding on margins
- Branding (new brands / brand recognition) → focus on visibility, not immediate sales
 - Focus on “awareness” stage of customer journey
 - Use general industry keywords
 - Brand driven ad text
 - Link to home page
 - Base bidding on position

[Flowers for Mother's Day](#)
Great selection of fresh flowers
Order online today!
[www.exampleinc.com](#)



[Lloyd & Partners](#)
Experienced tax lawyers
30 years of experience
[www.exampleinc.com](#)



HOW KEYWORDS ARE MATCHED TO USER SEARCH QUERIES?

Match type	Special symbol	Example keyword	Ads may show on searches that contain:	Example searches
Broad match	none	women's hats	Misspellings, synonyms, related searches, and other relevant variations.	<ul style="list-style-type: none">buy ladies hatswomen's clothing
Broad match modifier	+keyword	+women's +hats	All the terms designated with a + sign (or close variations of those terms) in any order. Additional words may appear before, after, or between the terms.	<ul style="list-style-type: none">women's scarves and hatswinter hats for women
Phrase match	"keyword"	"women's hats"	Matches of the phrase (or close variations of the phrase) with additional words before or after.	<ul style="list-style-type: none">blue women's hatsbuy women's hatswomen's hats on sale
Exact match	[keyword]	[women's hats]	Exact matches of the term or close variations of that exact term with the same meaning.	<ul style="list-style-type: none">women's hatsladies hatshats for womenhats women

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Phrase match	"keyword"	"women's hats"	Matches of the phrase (or close variations of the phrase) with additional words before or after.	<ul style="list-style-type: none"> blue women's hats buy women's hats women's hats on sale
Exact match	[keyword]	[women's hats]	Exact matches of the term or close variations of that exact term with the same meaning.	<ul style="list-style-type: none"> women's hats ladies hats hats for women hats women

- Audience size
- Match quality → click through rate, conversion rate
- Competition
- Cost of ads

USE NEGATIVE KEYWORDS TO REMOVE UNDESIRED MATCHES?

Match type	Special symbol	Example keyword	Ads may show on searches that contain:	Example searches
Broad match	none	women's hats	Misspellings, synonyms, related searches, and other relevant variations.	<ul style="list-style-type: none"> buy ladies hats women's clothing
Broad match modifier	+keyword	+women's +hats	All the terms designated with a + sign (or close variations of those terms) in any order. Additional words may appear before, after, or between the terms.	<ul style="list-style-type: none"> women's scarves and hats winter hats for women 
Negative Keywords		-winter hats		
Phrase match	"keyword"	"women's hats"	Matches of the phrase (or close variations of the phrase) with additional words before or after.	<ul style="list-style-type: none"> blue women's hats buy women's hats women's hats on sale
Exact match	[keyword]	[women's hats]	Exact matches of the term or close variations of that exact term with the same meaning.	<ul style="list-style-type: none"> women's hats ladies hats hats for women hats women

- Audience size
- Match quality → click through rate, conversion rate
- Competition
- Cost of ads

MORE NEGATIVE KEYWORD EXAMPLES

Negative match keyword	Ads may show on searches for	Ads won't show on searches for
-women	girls' hats sun hats	hats for women women's hats
-"women's hats"	girls' hats women's baseball hats	women's hats Women's hats women's hats for sale want to buy women's hats
-[women's hats]	buy women's hats women's hats on sale	women's hats Women's hats

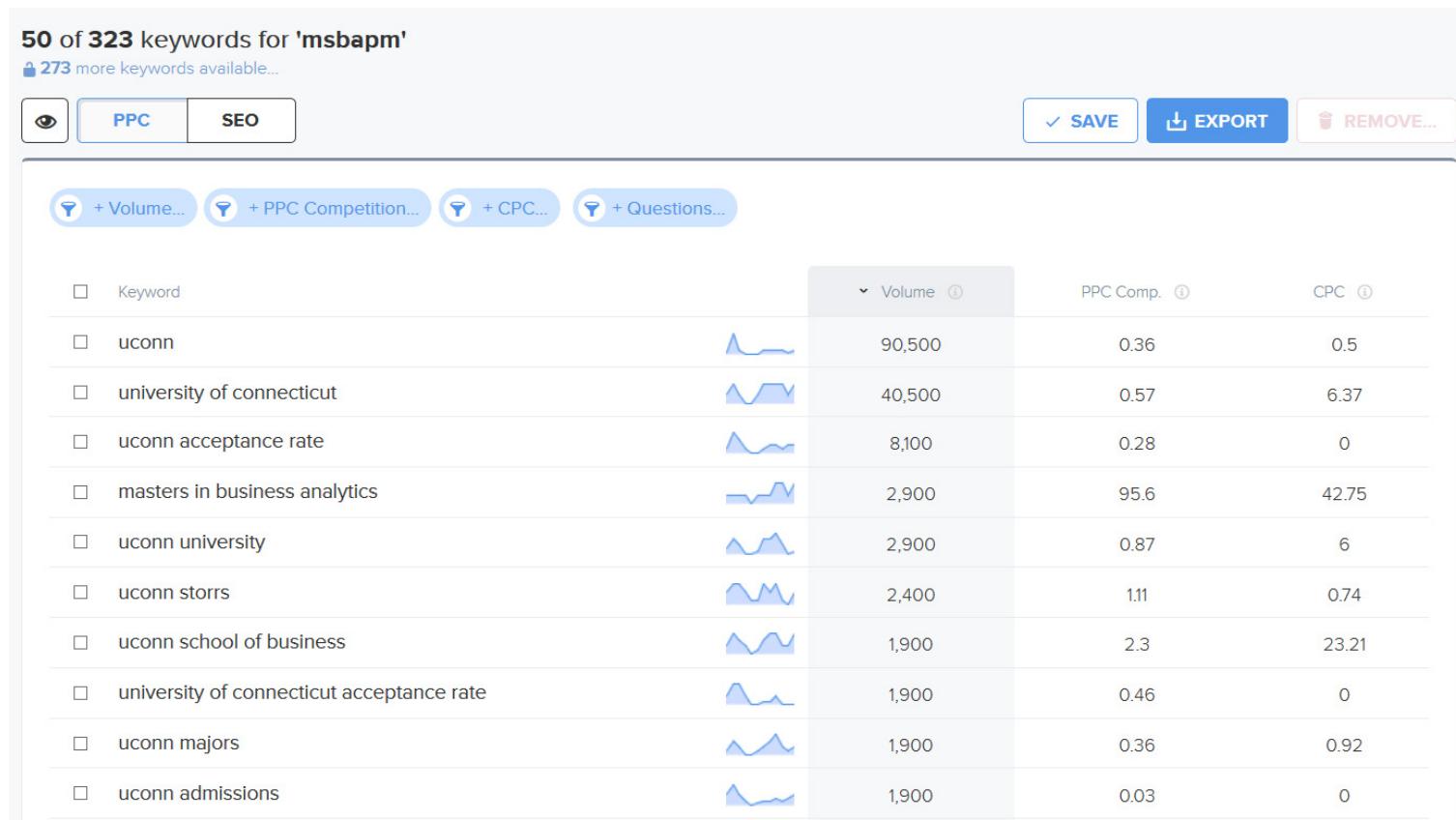
A KEYWORD MATCH EXERCISE

- 1) formal footwear
- 2) evening footwear
- 3) men's dress wingtips
- 4) evening shoes
- 5) black dress shoes
- 6) formal evening shoes
- 7) black formal shoes
- 8) formal shoes for men
- 9) formal shoes

- Which of these queries will match the keyword?
 - Broad match: formal shoes
 - Broad match modifier: formal +shoes
 - Broad match modifier: +formal +shoes
 - Broad match modifier: -formal +shoes
 - Phrase match: “formal shoes”
 - Exact match: [formal shoes]

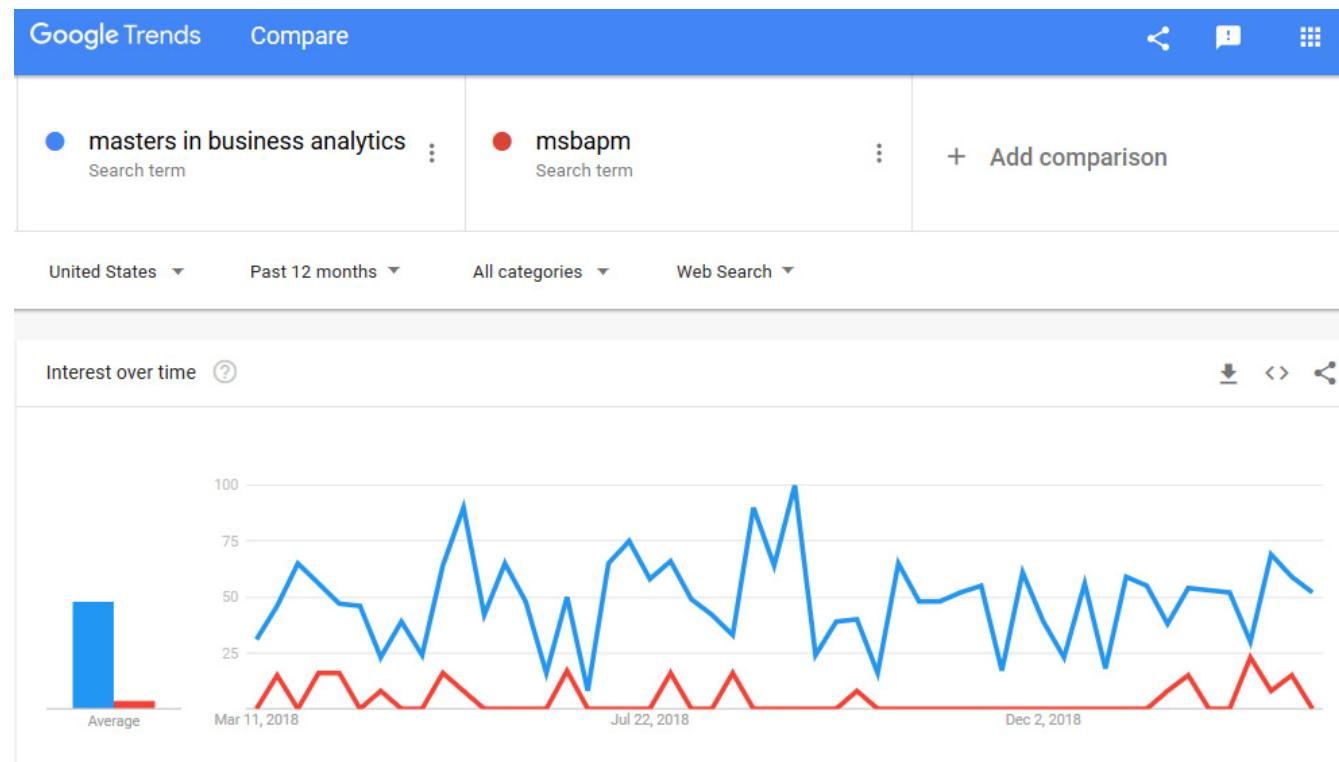
HOW FREQUENTLY ARE KEYWORDS SEARCHED?

- Tools to check popularity of keyword searches, e.g.,
 - WordTracker.com
 - Google Trends



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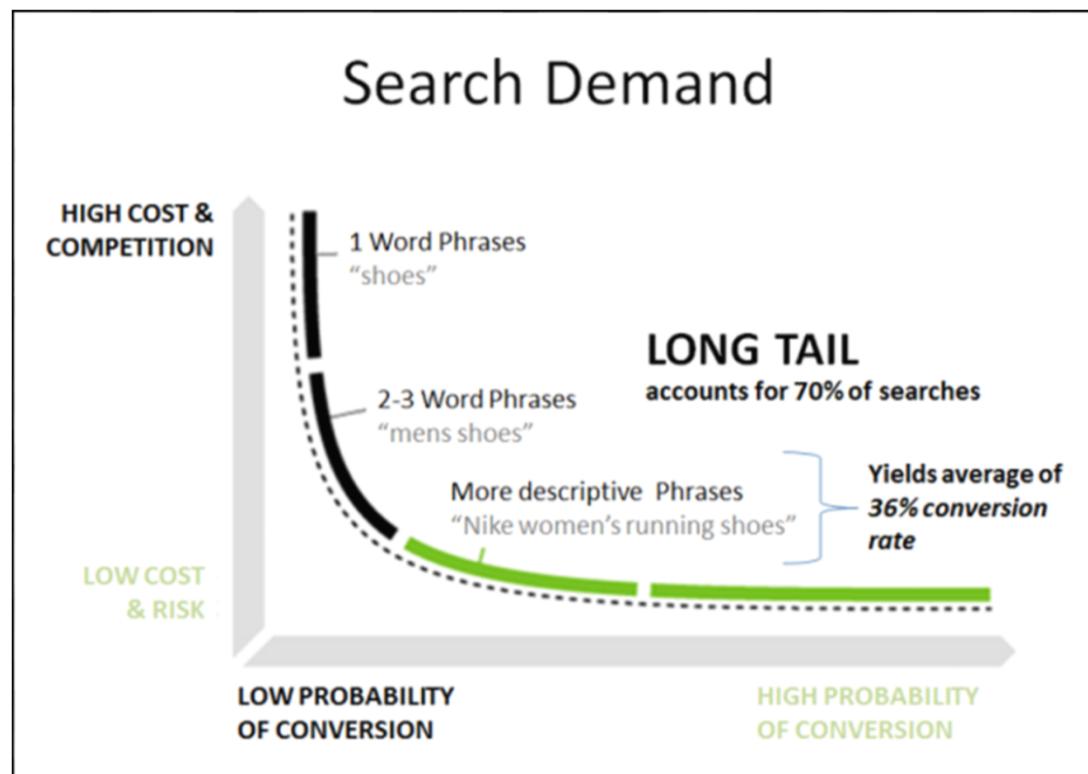


KEYWORD SELECTION

- Due to the amount of competition for general terms in the search engines, if your keyword phrases are too general, it is very unlikely you will rank well in the search engines.
- You stand a better chance to rank well for specific phrases where there is less competition. The resulting traffic, since they are more targeted, can also be higher quality.
- For example:
 - shoes vs. fashionable Italian shoes
 - Men's shoes vs. men's leather dress shoes
 - Women's shoes vs. women's aerobic shoes

A SUGGESTED STRATEGY: USE LONG TAIL KEYWORDS

- Long tail keywords are keyword terms which are less popular, less competitive and less searched for, but when taking collectively, long tail keyword phrases can be responsible for driving a significant level of website traffic.
- The benefit of using long tail keywords properly is the reduced cost per lead with a high conversion rate.

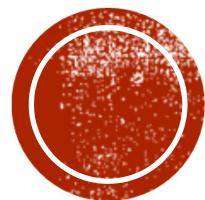


KEYWORD SELECTION AND EXPENSE

- How expensive are the keywords depends on
 - Competition (head vs. tail)
 - Stage of customer journal (e.g., “cruise vacation” for awareness stage vs. “Bahamas cruise” for consideration stage)
 - Segment being targeted (new vs. repeat customer segment)

For example:

- “cruise vacation” head KW – likely to be expensive (awareness stage)
- “cruise vacation in Bahamas in March” tail KW – still likely to be expensive (conversion stage)
- “cruise ship on Mississippi” tail KW – not likely to be expensive because of lack of competition (awareness, consideration stage)
- “star cruise” – may not be expensive as a branded KW to target on repeat customer segment

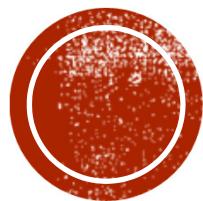


III.2. CREATE AD COPIES



CREATE AD COPIES

- Ad copies are created for each set of closely related keywords that are being advertised
- Create multiple ad copies for each set of keywords, and tools like Google Ads can test which ad works better and generates a higher CTR (click through rate)
- The next level of optimization must be done by the advertiser since Google can only optimize among the copies that it is given – continuous experimentation (A/B testing) is needed



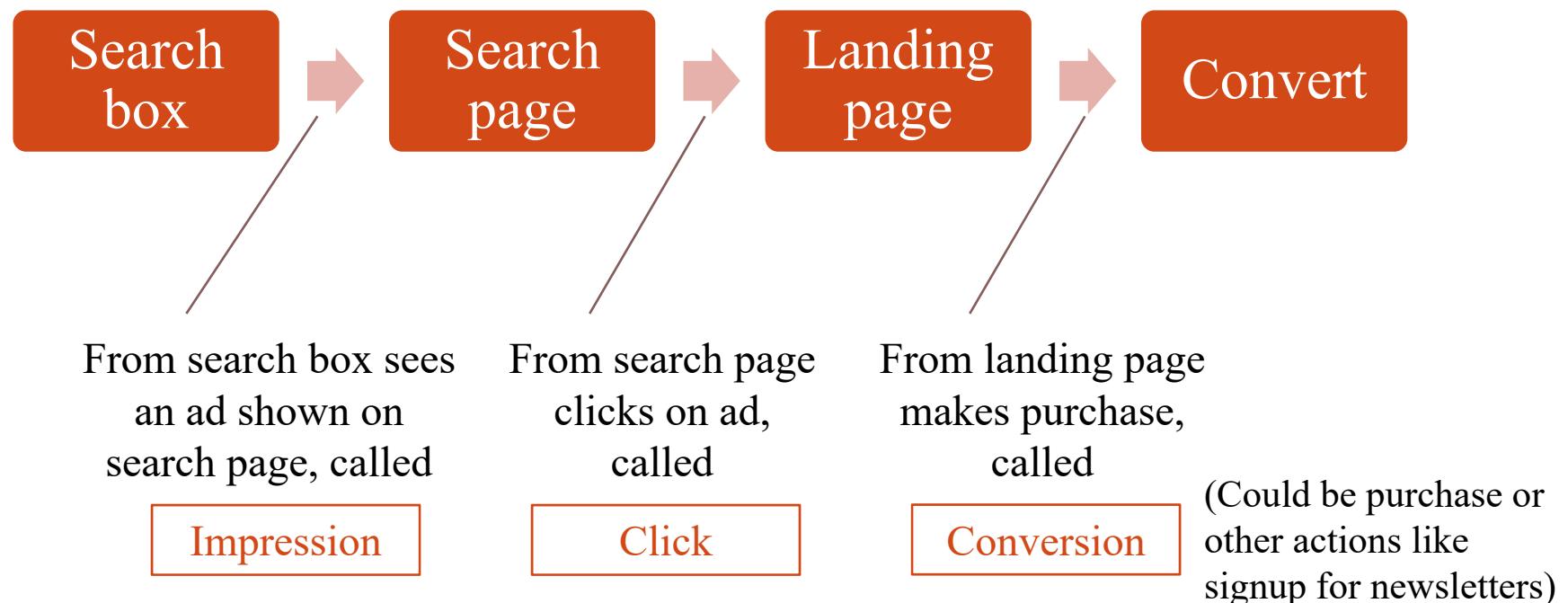
II.3. LINK ADS TO LANDING PAGES



LINK ADS TO LANDING PAGES

- Landing page is the page that loads when the ad is clicked
- Which webpage has content related to the keyword?
- Campaign success depends on CTR (click through rate on ad) and TCR (transaction conversion rate on webpage)
- CTR depends on Ad, but TCR depends on whether landing page design is easy to navigate, the price is right and whether the landing page fulfills the expectation that the ad created
- So, along with the ad copy, the website copy also needs to be tested and improved – tools like Google Ads don't do this part automatically

SEARCHERS' FLOW OF ACTIVITIES



Click Through Rate = Clicks/Impressions

Conversion Rate= Conversions/Clicks

How many clicks you get per 100 impressions helps evaluate the ***effectiveness of ad copy***

How many conversions you get per 100 clicks helps evaluate the ***effectiveness of landing page***

HOW DO WE INCREASE CONVERSION RATE?

■ Landing page testing

The RealAge Test

Calendar Age	Difference	My RealAge
?	?	?

THREE Steps

1. Test Questions
Privacy and Personalization
2. Results
3. My Plan

What's YOUR RealAge?

Your RealAge is the biological age of your body, based on how well you've maintained it. Are you as young as you can be? Complete the patented, one-of-a-kind RealAge test today!

As you answer the questions, watch your RealAge grow younger...or older! When you finish the test, you'll get a personalized RealAge plan, developed by MDs and PhDs!

Privacy and Personalization

What is your e-mail address?
We will not share your address or send you e-mail without your permission.

To maintain your [privacy](#), we use your e-mail address to identify you.

What is your password?
If you don't have a password, make one up.

If you don't remember your password, go here. A password will save your data at RealAge.

Would you like us to remember your password for next time?
 Yes No

Continue

[Switch to secure sockets \(SSL\)](#)



The RealAge Test

As seen on:

OPRAH TODAY GOOD MORNING AMERICA 2020 MSNBC FOX NEWS CNN The New York Times

Free Test

Your RealAge is the "biological" age of your body, based on how well you've maintained it.

Privacy and Personalization

E-mail
We will not share your address or send you e-mail without your permission.

Password
If you don't have a password, make one up.

Remember password
 Yes No

Submit

[Submit](#)

[Switch to secure sockets \(SSL\)](#)

- Conversion: completing registration
- Test Size: 552,960
- 40% lift in conversion rate
- \$3,285,000 annual profit improvement

HOW DO WE INCREASE CONVERSION RATE?

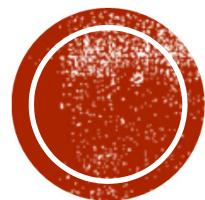
■ Landing page testing

The screenshot shows the original landing page for Registry Booster. At the top, it features the Uniblue logo and the tagline "Software Made Easy". Below this is the Registry Booster logo with a 5-star rating and the text "WINNER OF OVER 100 5-STAR AWARDS". A large orange button labeled "Start FREE System Scan" is prominently displayed. To the left, there's a graphic showing a pie chart with 94% filled, accompanied by the text "94% of computers have corrupt, unused, and possibly harmful files!". Below this, another section highlights "How many .exe related Errors does your Computer have?" with a similar pie chart. The Microsoft Certified Partner badge is visible. On the right, there's a section titled "What is Registry Booster?" with a brief description and a screenshot of the software interface. Further down, there's a "How will Registry Booster fix .EXE related Errors?" section with a detailed explanation and another screenshot. At the bottom, a callout states "You may have .exe related errors on your system that can cause crashes or system failures, check it now!" with a "Start FREE System Scan" button.



The screenshot shows the optimized landing page for Registry Booster. It has a similar layout but with several changes. The "Start FREE System Scan" button is now green and labeled "Instant Scan". The "94%" pie chart section is also green. The "What is Registry Booster?" and "How will Registry Booster fix .EXE related Errors?" sections have been removed. Instead, there's a new "The Problem" section with a detailed explanation and a "The Solution" section with a brief summary. The Microsoft Certified Partner badge is present. The right side features a "2 minutes can save you months of frustration and crashes." callout with a green "Instant Scan" button. The overall design is cleaner and more focused on the key selling points.

- Conversion: downloading free software
- Test Size: 3,110,400
- 24% increase in conversion
- \$182,000 annual profit improvement



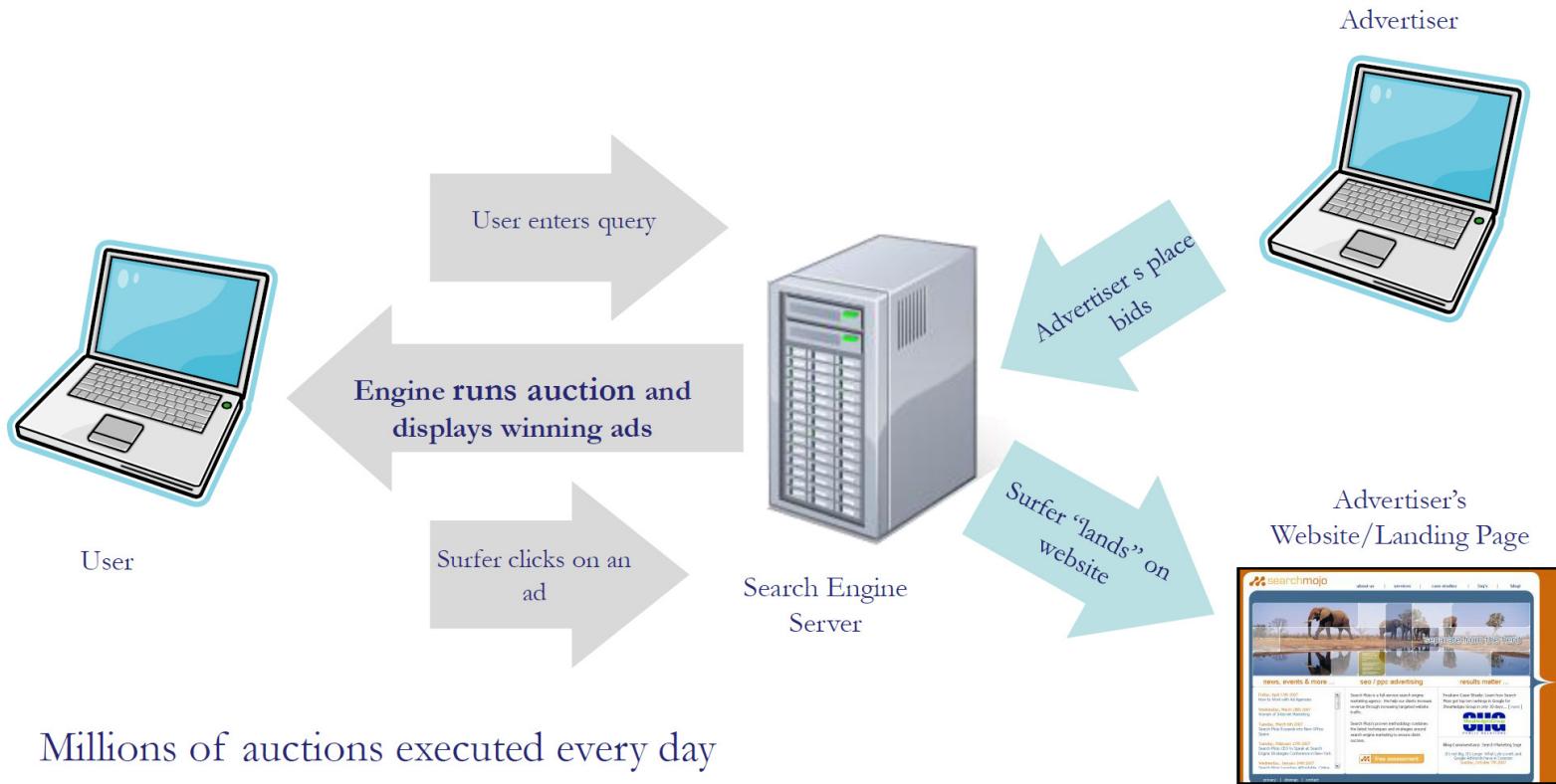
II.4. BID ON KEYWORDS



BID ON KEYWORDS: COST MODELS

- **Cost per click or CPC or PPC:** Advertisers are charged only when a user clicks on your ad, hence the pricing model is cost-per-click or pay per click (PPC)
 - CPC can be used for both Display and Search Networks
 - CPC bidding is a recommended method if you want to drive traffic to your website
- **Cost-per-impressions, or CPM:** Advertisers are charged every time their ad is displayed on display network
 - CPM is used for Display Networks Only
 - CPM bidding is a recommended method if you want to increase awareness of your brand
- **Cost-per-acquisition, or CPA:** Advertisers are charged when users take a specific action on the website after clicking on one of the ads
 - CPA can be used for both Display and Search Networks
 - CPA bidding is recommended for businesses focused on conversions

PAY-PER-CLICK (PPC) AUCTION MODEL



Daily Budget: amount advertiser is willing to spend each day

- Can choose between **manual bidding** (choose maximum bid amounts) and **automatic bidding** (let Google set bids to try to get the most clicks within budget).

THE PPC AUCTION MODEL

- Basic Model
 - Highest bidder gets highest slot
 - Winner pays winning bid
 - Not ideal, why?

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 - Second price auction
 - Reveals true willingness to pay, no need to be strategic
 - Winner for the i^{th} position pays the bid of bidder that gets the $i+1^{th}$ position

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 - Second price auction
 - Reveals true willingness to pay, no need to be strategic
 - Winner for the i^{th} position pays the bid of bidder that gets the $i+1^{th}$ position
- Still not the best for search engines, why?

QUALITY SCORE IDEA

- Search engine needs repeat customers
- Needs to improve user experience for long term
- Use a metric called Ad-rank

$$\text{Ad-rank} = \text{Bid Amount} \times \text{Quality Score}$$

- As a result, high quality score ads → lower bid amount
(incentive compatible)
- Quality Score is specific to a keyword for an advertiser

COMPONENTS OF QUALITY SCORE

- **Your keyword's past click through rate (CTR):** How often that keyword led to clicks on your ad
- **Your ad's past CTR:** How often you received clicks with that ad
- **Your account history:** The overall CTR of all the ads and keywords in your account
- **The quality of your landing page:** How relevant, transparent, and easy-to-navigate your page is
- **Your ad copy quality:** How relevant is your keyword to your ad
- **Your keyword relevance:** How relevant your keyword is to customer query
- **Geographic performance:** How successful your account has been in the regions you're targeting
- **Your ad's performance on a site:** How well your ad's been doing on this and similar sites (if you're targeting the Display Network)
- **Your targeted devices:** How well your ads have been performing on different types of devices, like desktops/laptops, mobile devices, and tablets – you get different Quality Scores for different types of devices

HOW ARE WINNING BIDS DECIDED?

Advertiser	Bid	Quality Score (QS)	AdRank (=Bid x QS)	Position	Price Per Click (=AdRank _{i+1} /QS _i)
A	\$.50	8	4.0	1	$3.0/8 + 0.01 = \$.39$
B	\$.50	6	3.0	2	$1.5/6 + 0.01 = \$.26$
C	\$.50	3	1.5	3	min price = \$.01

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Advertiser	Bid	Quality Score (QS)	AdRank (=Bid x QS)	Position	Price Per Click (=AdRank _{i+1} /QS _i)
A	\$.50	8			
B	\$.60	7			
C	\$.50	3			

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A	\$.50	8			
B	\$.60	7			
C	\$.50	3			

Advertiser	Bid	Quality Score (QS)	AdRank (=Bid x QS)	Position	Price Per Click (=AdRank _{i+1} /QS _i)
A	\$.50	8			
B	\$.60	4			
C	\$.50	3			

BENEFITS OF QUALITY SCORE (QS)

- Successfully combated Click Fraud
- What is click fraud?
 - The situation where an advertiser's competitor clicks on the advertiser's ads so that the advertiser has to pay the search engine for useless traffic
- How did QS system help?

HOW MUCH TO BID?

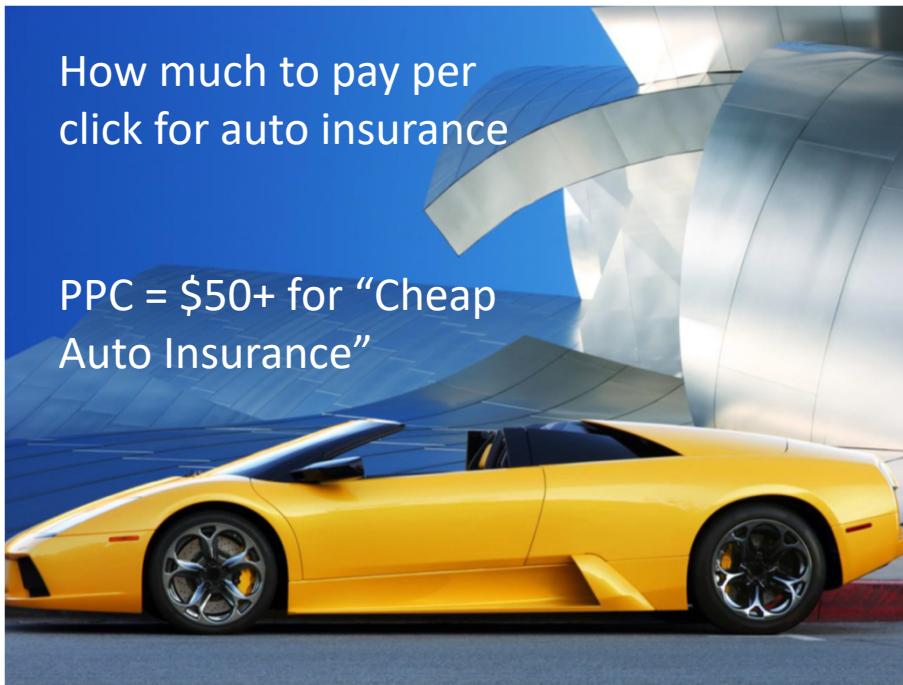


How much to pay per click for auto insurance



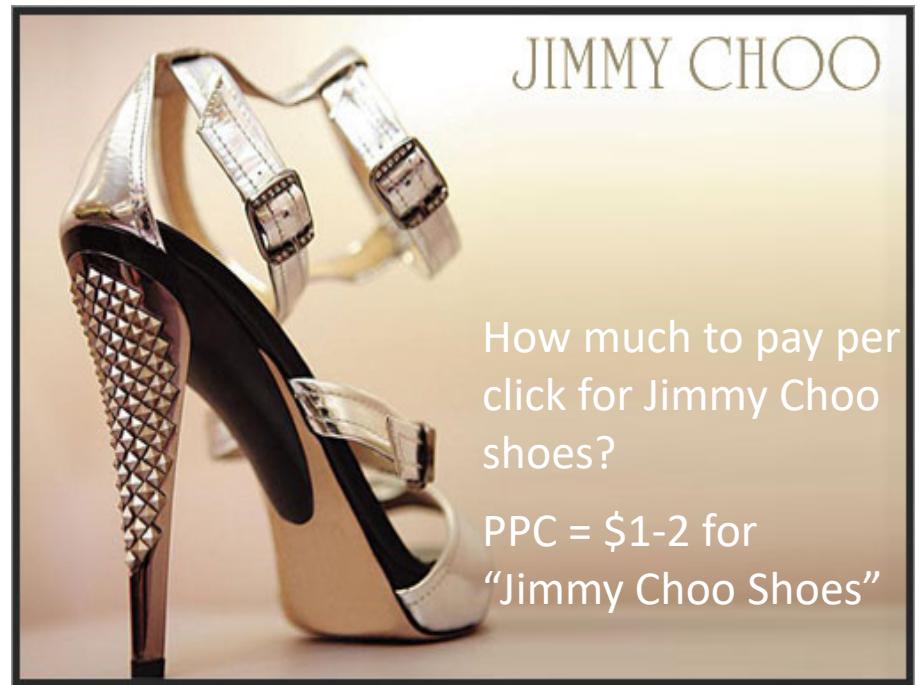
How much to pay per click for Jimmy Choo shoes?

HOW MUCH TO BID?



How much to pay per click for auto insurance

PPC = \$50+ for “Cheap Auto Insurance”



JIMMY CHOO

How much to pay per click for Jimmy Choo shoes?

PPC = \$1-2 for “Jimmy Choo Shoes”

Even though the revenue for the shoe and insurance is similar, ~\$600

HOW MUCH SHOULD THEY BID?

Product	Revenue per Sale	Margin per Sale	Of 100 clicks, how many sales
Auto Insurance	\$600	\$400	12
Jimmy Choo	\$600	\$100	1-2

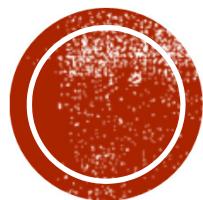
THE MAXIMUM POSSIBLE BID

Product	Margin per Sale	Conversion Rate	Profit Per Click
Auto Insurance	\$400	12%	\$48
Jimmy Choo	\$100	1-2%	\$1-2

- The most you can bid per click is what you earn per click – this is also called break-even bid

$$\text{break-even bid} = \text{Margin Per Sale} \times \text{Conversion Rate}$$

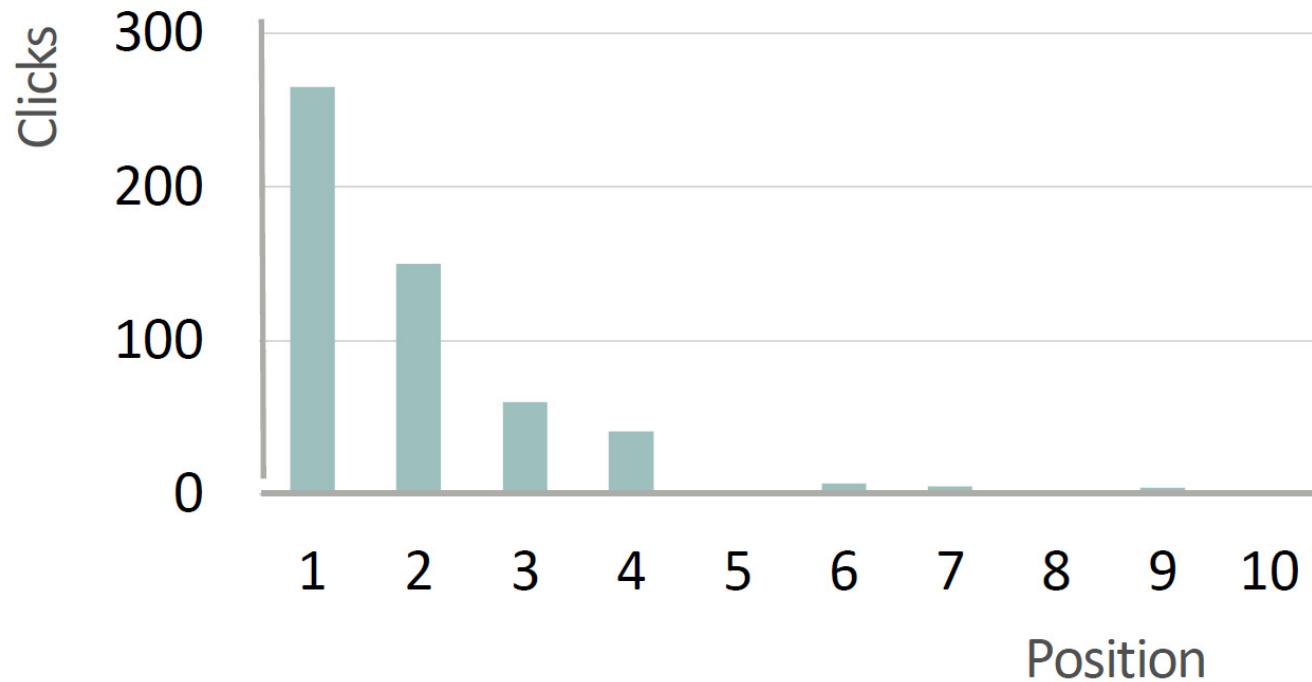
- To increase bid, you can
 - Increase price → increased margin → lower conversion rate
 - Improve landing page design to get more conversions



II.5. SEM STRATEGIES



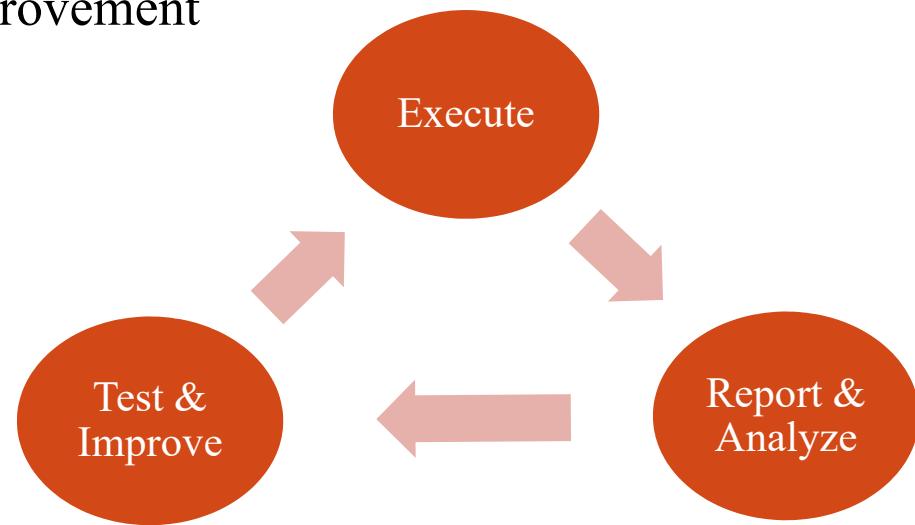
WHICH POSITION TO TARGET



- There is good reason to fight for the top
- Also realize that highest “Impression Share” or “Topmost Ranks” are NOT necessarily the most profitable ones. Higher revenue may still have a lower ROI.

LOW POSITION VS. HIGH POSITION

- Purpose may not be to maximize CTR, but to maximize net revenue
- Lower position would reduce CTR, but maybe not the conversion rate (in fact, conversion rate may be higher)
 - CTR * TCR may be higher at lower ranks → more people converting
- When higher ranks are very expensive, it may be better to bid low
 - CTR may decrease but margins may increase significantly
- Google Ads maximizes clicks by default; it may be better to use “maximize conversion”, or “maximize ROAS” (return on ad spend) option
- Strive for continual improvement



WHAT IMPLICATIONS CAN WE DRAW?

User's search term	Ad served	Landing page	Search volume	Click through rate	Conversion rate	Implications
Keyword 1	Ad 1	Page 1	High	Low	Low	
Keyword 1	Ad 2	Page 2	High	High	Low	
Keyword 1	Ad 1	Page 2	High	High	High	
Keyword 3	Ad 3	Page 3	Low	High	High	
Keyword 4	Ad 4	Page 4	Low	Low	High	

WHAT IMPLICATIONS CAN WE DRAW?

User's search term	Ad served	Landing page	Search volume	Click through rate	Conversion rate	Implications
Keyword 1	Ad 1	Page 1	High	Low	Low	Unattractive ad or offer not aligned with users' interests. If the problem is with the offer, bid for a different keyword. If the problem is with the ad, improve it.
Keyword 1	Ad 2	Page 2	High	High	Low	The ad is attractive but the landing page, or the offer presented on the landing page, is unsuitable.
Keyword 1	Ad 1	Page 2	High	High	High	Ideal, but difficult to achieve and usually expensive, as these words are usually in high demand.
Keyword 3	Ad 3	Page 3	Low	High	High	Usually this is a very specific keyword that does not get many searches but fits perfectly with the ad, the landing page and the offer. An attractive and generally inexpensive combination ("long tail").
Keyword 4	Ad 4	Page 4	Low	Low	High	Has every chance of achieving a conversion, but the ad is unattractive. Should review the ad.

PPC MATH

1. With a budget of \$1000, an average CPC of \$2.50, how many clicks can the advertiser receive before their budget is exhausted?
2. With an average CPC of \$2.00, a CTR of 1.5%, and 20,000 impressions, how much will the advertiser spend?
3. With an average CPC of \$2.00, how high does the conversion rate need to be in order to reach a goal CPA of \$10?
4. If you have a \$3,000 budget, your average CPC is \$0.50, and your conversion rate is 5%, what is your current CPA? How many conversions can you get for \$3,000?
5. Suppose you buy the product at wholesale for \$10 each, and you resell them online for \$50 each. You give away free shipping which costs \$5 each, and you want to make \$20 per product. What should your target CPA be?
6. Using the above information and answer (in 5), with an average CPC of \$3, how many clicks can you get before you get a sale? What should be your target conversion rate?

ANALYZING KEYWORD PERFORMANCE

Keyword Group	Keyword	Max CPC	Impressions	Clicks	Avg. Position	Avg. CPC	Total Ad Cost	Conversion	Profit
canon	canon eos rebel	\$1.05	5,400	53	6.00	\$1.05	\$55.65	2	\$144.00
canon	canon eos rebel t3i	\$0.85	27,100	352	4.50	\$0.85	\$299.20	14	\$1,008.00
canon	canon rebel	\$1.05	27,100	312	4.50	\$1.05	\$327.55	12	\$864.00
go pro	go pro	\$0.85	38,555	175	9.50	\$0.85	\$148.75	7	\$313.81
go pro	go pro camera	\$1.21	27,100	139	9.50	\$1.21	\$168.19	5	\$224.15
go pro	go pro hero	\$0.90	5,400	35	9.50	\$0.90	\$31.46	1	\$44.83
go pro	go pro hero 3	\$1.55	12,100	78	9.50	\$1.55	\$120.28	3	\$134.49
go pro	go pro hero camera	\$1.55	170	0	9.50	\$1.55	\$0.00	0	\$0.00
go pro	go pro hero hd	\$1.00	140	1	9.60	\$1.00	\$1.00	0	\$0.00
go pro	gopro	\$0.85	19,319	0	10.00	\$0.85	\$0.00	0	\$0.00
go pro	gopro camera	\$1.21	19,147	0	10.00	\$1.21	\$0.00	0	\$0.00
nikon	nikon coolpix l110	\$0.25	1,900	70	3.00	\$0.25	\$3.68	2	\$89.66

SEM exercise.xlsx
on course website

- Which keywords are performing well and which keywords are not? Why?
- Any keywords you would suggest to pause, increase bids for, or decrease bids for? Why?

ANALYZING KEYWORD PERFORMANCE

Keyword Group	Keyword	Max CPC	Impressions	Clicks	Avg. Position	Avg. CPC	Total Ad Cost	Conversion	Profit	CTR	Conversion Rate	CPA	ROA
canon	canon eos rebel	\$1.05	5,400	53	6.00	\$1.05	\$55.65	2	\$144.00	0.98%	3.77%	\$27.83	\$2.59
canon	canon eos rebel t3i	\$0.85	27,100	352	4.50	\$0.85	\$299.20	14	\$1,008.00	1.30%	3.98%	\$21.37	\$3.37
canon	canon rebel	\$1.05	27,100	312	4.50	\$1.05	\$327.55	12	\$864.00	1.15%	3.85%	\$27.30	\$2.64
go pro	go pro	\$0.85	38,555	175	9.50	\$0.85	\$148.75	7	\$313.81	0.45%	4.00%	\$21.25	\$2.11
go pro	go pro camera	\$1.21	27,100	139	9.50	\$1.21	\$168.19	5	\$224.15	0.51%	3.60%	\$33.64	\$1.33
go pro	go pro hero	\$0.90	5,400	35	9.50	\$0.90	\$31.46	1	\$44.83	0.65%	2.86%	\$31.46	\$1.42
go pro	go pro hero 3	\$1.55	12,100	78	9.50	\$1.55	\$120.28	3	\$134.49	0.64%	3.85%	\$40.09	\$1.12
go pro	go pro hero camera	\$1.55	170	0	9.50	\$1.55	\$0.00	0	\$0.00	0.00%	0.00%	\$0.00	\$0.00
go pro	go pro hero hd	\$1.00	140	1	9.60	\$1.00	\$1.00	0	\$0.00	0.71%	0.00%	\$0.00	\$0.00
go pro	gopro	\$0.85	19,319	0	10.00	\$0.85	\$0.00	0	\$0.00	0.00%	0.00%	\$0.00	\$0.00
go pro	gopro camera	\$1.21	19,147	0	10.00	\$1.21	\$0.00	0	\$0.00	0.00%	0.00%	\$0.00	\$0.00
nikon	nikon coolpix l110	\$0.25	1,900	70	3.00	\$0.25	\$3.68	2	\$89.66	3.68%	2.86%	\$8.76	\$24.36

- Which keywords are performing well and which keywords are not? Why?
- Any keywords you would suggest to pause, increase bids for, or decrease bids for? Why?

CTR =	Clicks / Impressions
Conversion Rate =	Conversions / Clicks
CPA =	CPC / Conversion Rate
ROA =	Profits / Total cost
(Return on Ad)	

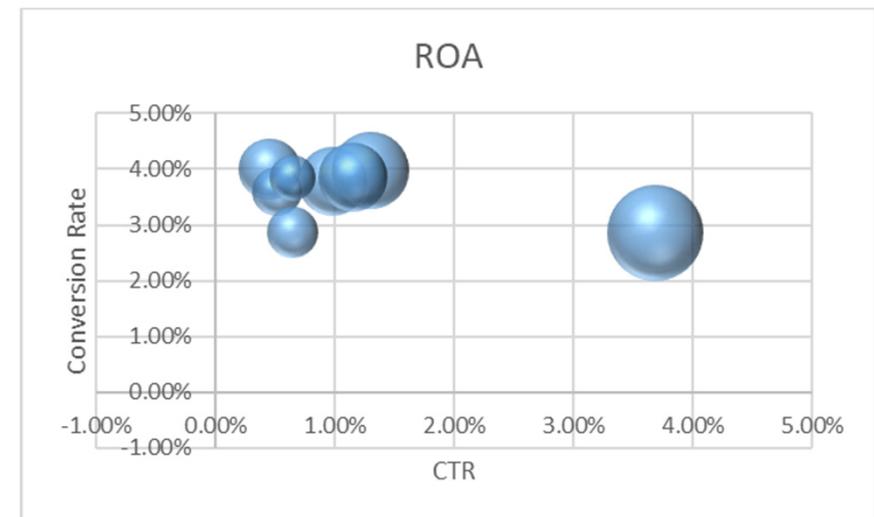
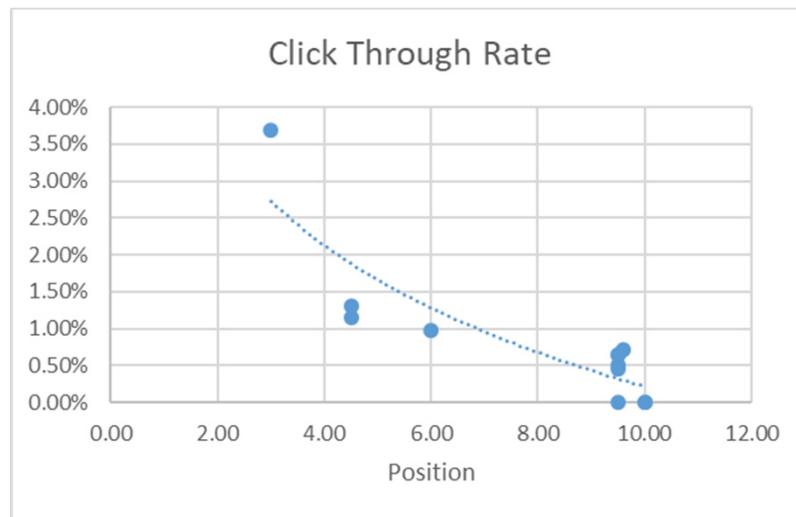
SIMPLE TOOLS – PIVOT TABLE

- A PivotTable calculates, summarizes, and analyzes data that lets you see comparisons, patterns, and trends in your data.
[\(https://www.excel-easy.com/data-analysis/pivot-tables.html\)](https://www.excel-easy.com/data-analysis/pivot-tables.html)

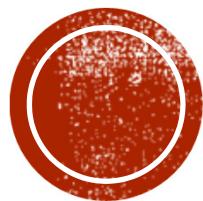
Keyword Group	Average of CTR	Average of CPA	Sum of Net Profit
canon	1.14%	\$25.50	\$1,333.60
go pro	0.37%	\$15.84	\$247.60
nikon	3.68%	\$8.75	\$85.98
Grand Total	0.84%	\$17.66	\$1,667.18

SIMPLE TOOLS – SCATTER AND BUBBLE CHARTS

- Charts visually present the relationship between multiple data series
 - Scatter charts show the relationship between two data series (<https://www.excel-easy.com/examples/scatter-chart.html>)
 - bubble charts show the relationship between three data series (<https://support.office.com/en-us/article/present-your-data-in-a-bubble-chart-424d7bda-93e8-4983-9b51-c766f3e330d9>)



III. ONLINE DISPLAY ADVERTISING



HOW DO DISPLAY ADS WORK?



WHEN IS AD SHOWN IN SEARCH NETWORK?

When keywords match the search query. Matches can be refined based on targeting criteria that are specified:

- **Location** – the places where you want your ad to show up, on the basis of Google domain (e.g. www.google.de for Germany) and IP address (to estimate geographical location)
- **Language** – language preference set for Google and language of sites people visit, e.g. target ads to those customers whose Google Interface language setting is set to Spanish.
- **Device** – e.g. mobile vs. laptop
- **Time** – time of the day

WHEN IS AD SHOWN IN DISPLAY NETWORK?

When your Display Network targeting criteria are satisfied. For example:

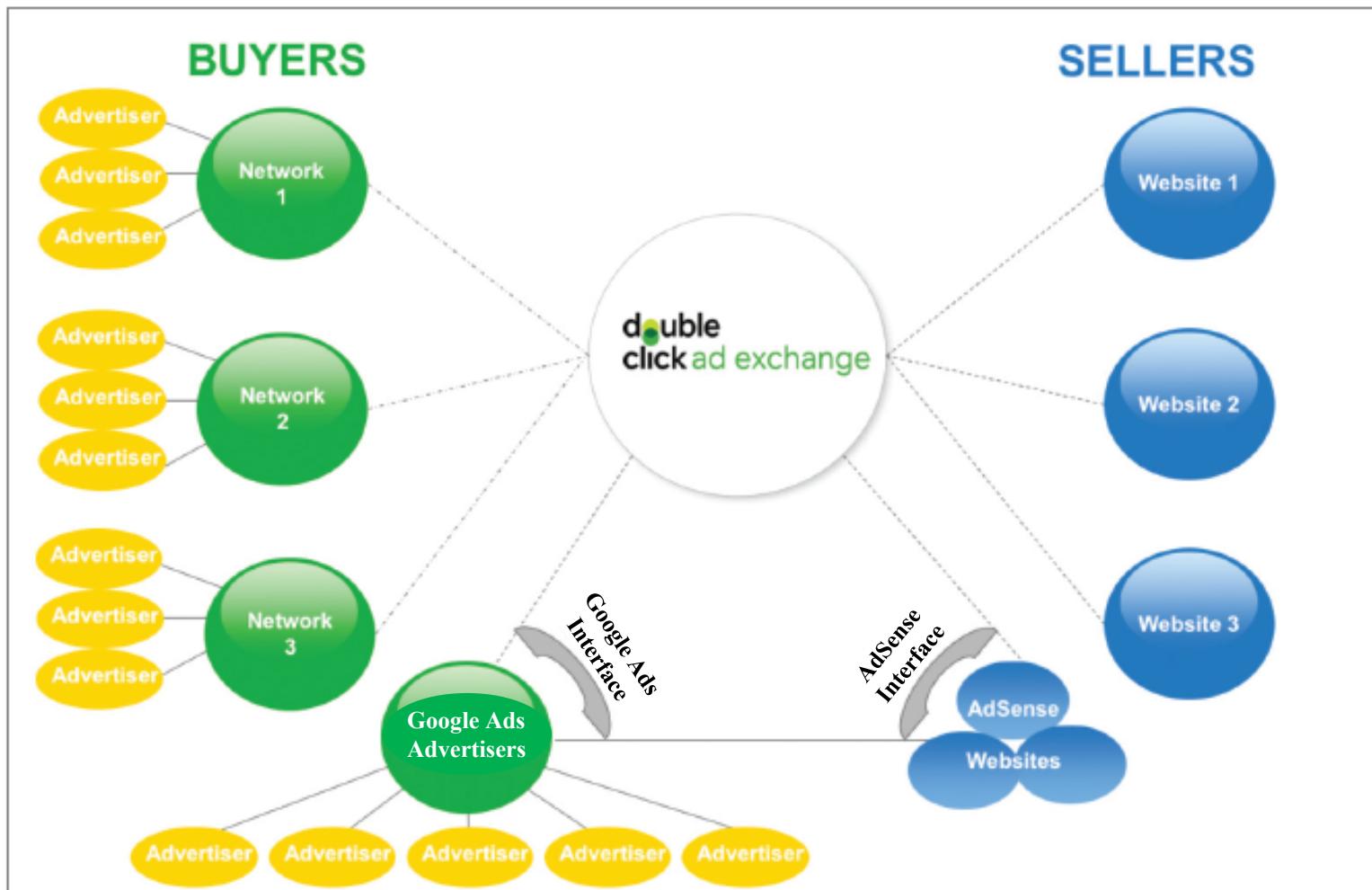
- **Audience targeting** shows ads to specific groups of people, e.g., people who have certain interests (inferred by the nature of websites they visit)
- **Contextual targeting** shows ads on websites where content phrases match your content keywords or the website topic matches your topic selection
- **Placement targeting** shows ads on websites that are chosen by the advertiser
- Can also do **language targeting**, **device targeting** and **location targeting**

INFORMATION COLLECTED

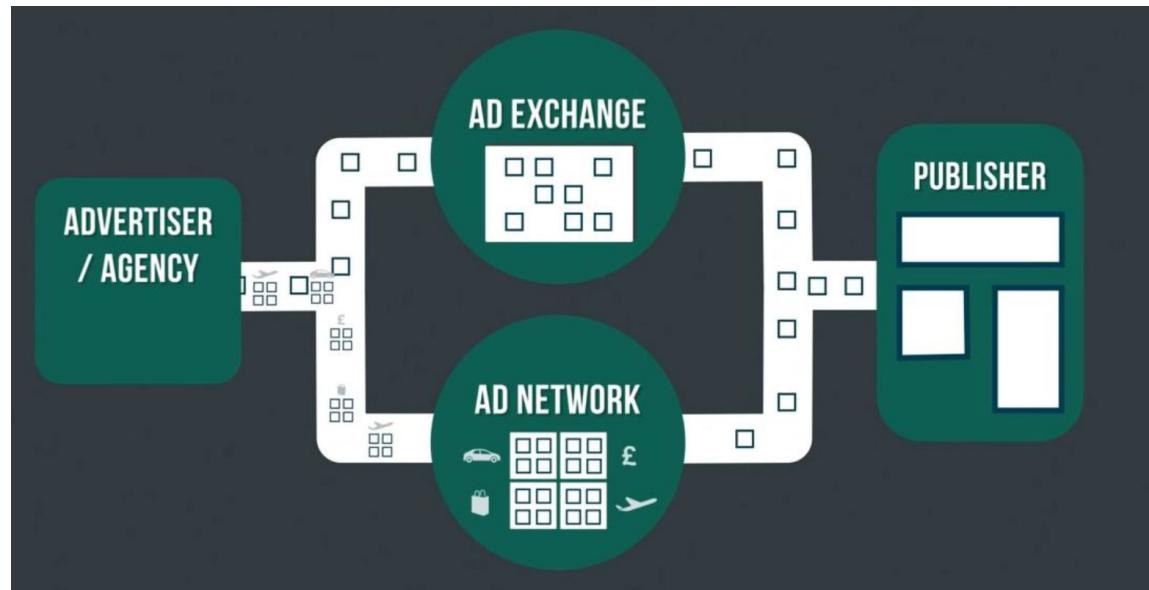
- The cookie identifier provides a way to connect customer identity across sessions
- Backend CRM systems maintain the database of information related to a user
- What information is collected?
 - System related information
 - Device type, manufacturer
 - Browser
 - Operating System
 - User actions
 - Actions performed on a website (e.g. search, add to cart, visit a page)
 - Time taken in user actions
 - e.g. time spent on home page, a product page etc.

DISPLAY ADVERTISEMENT ECOSYSTEM

DoubleClick Ad Exchange Overview



AD NETWORKS AND AD EXCHANGE



- Ad network acts as an intermediary between advertisers and publishers. It collects publisher's inventory and matches it with demand from advertisers. It allows advertisers to target specific groups of customers.
 - Examples: Google Ads, Bing Ads, Media.net
- Ad Exchange offers an online marketplace where supply and demand parties (publishers, advertisers, ad networks etc.) buy and sell ad inventory directly with real time bidding. It allows advertisers to target specific customers impression by impression, based on individualized bid.
 - Examples: Google's DoubleClick, Microsoft Ad Exchange, AppNexus

DATA USED IN RTB (REAL TIME BIDDING)

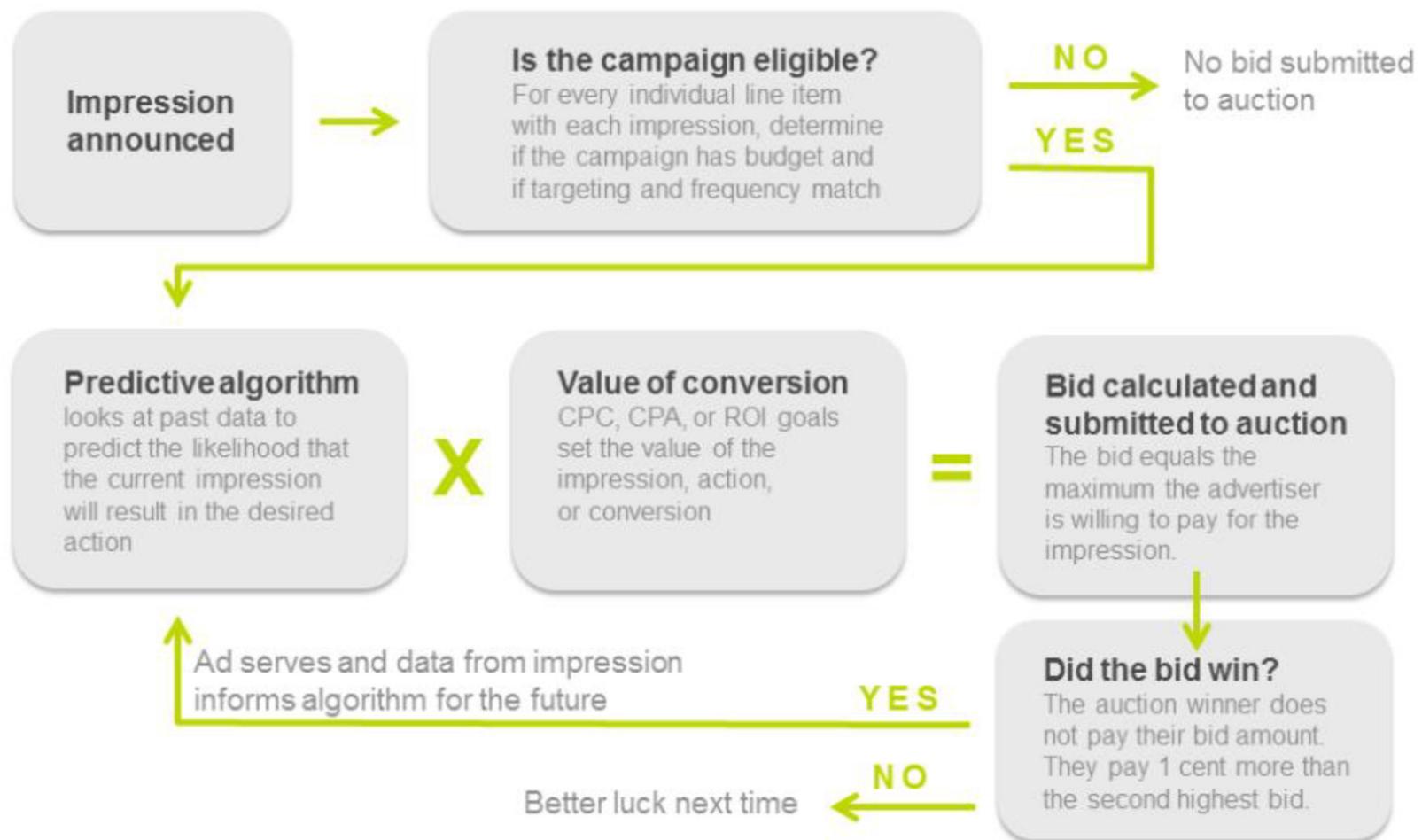
- During bidding on Ad Exchanges, for each impression an advertiser needs to decide
 - Whether to bid
 - If it wants to bid, then how much to bid
- Besides own cookies and first party data, advertisers can purchase additional third party data from Data Management Platforms (DMPs), e.g., Bluekai, eXelate, Lotame, that include
 - Web and mobile browsing behaviors
 - Transaction data
 - Social behaviors
 - Response to online ads of different types
 - Email responses
 - Weather related, etc.

HOW DOES BLUEKAI WORK?

Here's a step-by-step process of how the Oracle Data Cloud interacts with consumers:

- ✓ Jasmine is shopping online for air travel between New York to Hawaii. As she visits different online travel sites that partner with Oracle Data Cloud, we store an anonymous cookie on her browser.
- ✓ Because of her activity, Oracle Data Cloud associates Jasmine's computer as being interested in Hawaiian travel. If Jasmine visits the Oracle Data Cloud she will notice that Hawaiian travel is noted as one of her interests.
- ✓ As a result, Oracle Data Cloud's marketing partners will show interest-based ads on Jasmine's computer that are relevant to Hawaii travelers. (For a limited amount of time.)
- ✓ From the Oracle Data Cloud, Jasmine can update her preferences by removing her Hawaiian travel interest segment or opting out from cookie-based interest-based advertising facilitated by the Oracle Data Cloud (BlueKai and Datalogix) in the Oracle Data Cloud Registry

How bid optimization happens in RTB



PRICING OF ADS ON AD NETWORKS

- Can be fixed rate, or CPM, CPC or CPA based bidding (in Google Ads)
 - CPM: cost per *thousand* impression
- Advertisers may be competing for the same ad space
 - Ad networks need to track CTRs of advertisers

An example: which advertiser will win?

	Advertiser 1	Advertiser 2
Bid	\$3 CPM	\$0.75 CPC
Past Click-Through Rate	.1%	.2%

AN EXAMPLE OF DISPLAY AD BIDS

	Advertiser 1	Advertiser 2	Advertiser 3
CTR	0.8%	0.7%	0.6%
Conversion rate	2.3%	3.1%	1.9%
Profit per conversion	\$15	\$20	\$30
CPM	\$20	\$20	\$20
CPC			
CPA			
Break-even CPM			

What is the implication of these numbers? Are the advertisers breaking even? What are their break-even CPM bid?

HOW TO INCREASE CTR FOR DISPLAY ADS?

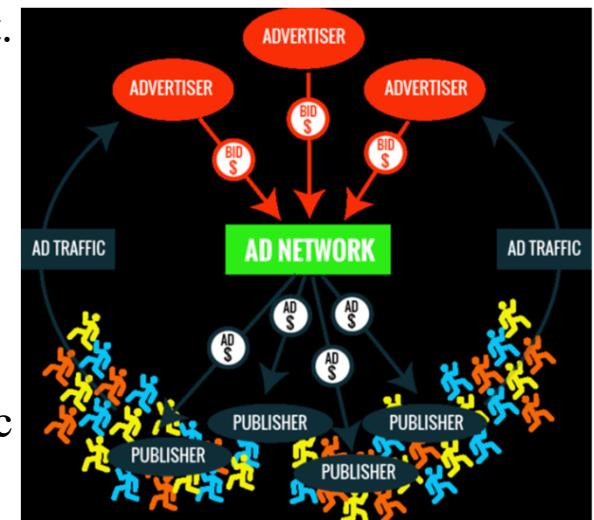
- More chance of completing a Navy Seal's training program than clicking on a display ad
- More obtrusive ads get more CTRs
 - E.g., ads that moved, popped up, used videos etc.
- Contextually targeted ads get more CTRs
 - E.g., a banner ad of a cruise is more effective if displayed on a site devoted to travel and leisure
- However, contextually targeted ads with high obtrusiveness don't work
 - Why?

HOW TO INCREASE CTR FOR DISPLAY ADS?

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 - E.g., a banner ad of a cruise is more effective if displayed on a site devoted to travel and leisure
- However, contextually targeted ads with high obtrusiveness don't work
 - Why?
 - Privacy concerns – consumers felt they were being manipulated when obtrusive ads were shown on websites relevant to the ads

HOW TO INCREASE CTR FURTHER?

- Ad Networks make targeting possible at scale
 - **Content** targeting (also called context based targeting) narrows the audience to a group with a common interest. Use **sites in certain categories or keyword based content targeting.**
 - **Profile** targeting allows you to focus on a specific attribute of your audience, such as demographics (e.g., men in their 40s, married with children) or geographic location (e.g., residents of Hartford)
 - **Behavioral** targeting helps you attract users in a specific state of mind by identifying their online behavior, enabling you to deliver the right message to a highly qualified audience
 - Use *content and profile targeting* to influence customers in the **awareness phase**, and *behavioral targeting* in the **consideration, preference formation and conversion phase** of their customer journey



REMARKETING OR RETARGETING



- Third party cookies are used to do remarketing.
- Typically focus on visitors who are in the conversion phase, e.g., indicated by adding an item to cart
- Also work for other phases of the customer journal
 - People in **consideration phase** can be targeted
 - Anyone who has visited only the advertiser's homepage
 - People in the **preference formation** phase can be targeted
 - People who visited product pages on the advertiser's site
 - People who have **already purchased** can be targeted
 - for up-sell or cross-sell
- Keep it relevant
 - Target visitors who have been to the advertiser's site recently (usually 30-90 days)
 - Do frequency capping to avoid over-exposure to ads (e.g. 3 ads shown per day)