



First and last touch attribution

Learn SQL from Scratch

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Table of Contents

1. Get familiar with CoolTShirts

- i. Campaigns and sources
- ii. Pages on the CoolTShirts site

2. What is the user journey?

- i. First touches
- ii. Last touches
- iii. Purchases
- iv. Overall user journey

3. Optimising the campaign Budget

1. Get familiar with CoolTShirts

How many campaigns and sources does CoolTShirts use and how are they related?

A source (utm_source) is a touchpoint that drives traffic to a website, for example, facebook, email, buzzfeed. CoolTShirts has 6 sources (nytimes, email, buzzfeed, facebook, medium, google)

A campaign (utm_campaign) is a specific piece of communication that is designed to generate a response. Examples could be an retargeting ad on facebook, or a paid search on google. Each source can have multiple campaigns associated with it, for example weekly-newsletter and retargeting-campaigns are both associated with the email source. CoolTShirts has 8 campaigns (shown below with their sources)

```
1  --1. How many campaigns and sources does CoolTShirts use? Which source is
   used for each campaign?
2
3  --Count distinct campaigns
4  SELECT COUNT (DISTINCT utm_campaign) AS 'Campaign Count'
5  FROM page_visits;
6
7  --Count distinct sources
8  SELECT COUNT (DISTINCT utm_source) AS 'Source Count'
9  FROM page_visits;
10
11 --Relationship between campaigns and sources
12 SELECT DISTINCT utm_campaign AS 'Campaigns',
13                 utm_source AS 'Source'
14 FROM page_visits;
```

Query Results	
Campaign Count	
8	
Source Count	
6	
Campaigns	Source
getting-to-know-cool-tshirts	nytimes
weekly-newsletter	email
ten-crazy-cool-tshirts-facts	buzzfeed
retargeting-campaign	email
retargeting-ad	facebook
interview-with-cool-tshirts-founder	medium
paid-search	google
cool-tshirts-search	google

What pages are on the CoolTShirts website?

There are four distinct pages on the CoolTShirts website that the links in campaigns directed users to.

Landing page

Shopping cart

Checkout

Purchase

```
1  --2. What pages are on the CoolTShirts website?
2  SELECT DISTINCT page_name AS 'Pages'
3  FROM page_visits;
```

Query Results

Pages

1 - landing_page

2 - shopping_cart

3 - checkout

4 - purchase

2. What is the user journey?

What is the user journey – first touches by campaign?

```
1  --What is the user journey?
2  --3. How many first touches is each campaign responsible for?
3  --create a temporary table (first_touch) that finds the earliest
   timestamp for each user id
4  WITH first_touch AS (
5      SELECT user_id,
6             MIN(timestamp) AS 'first_touch_at'
7      FROM page_visits
8      GROUP BY user_id),
9  --create another temporary table that adds source and campaign colums by
   joining first_touch to page_visits table on user_id and timestamp
10 ft_attr AS (
11     SELECT ft.user_id,
12            ft.first_touch_at,
13            pv.utm_source,
14            pv.utm_campaign
15     FROM first_touch ft
16     JOIN page_visits pv
17         ON ft.user_id = pv.user_id
18         AND ft.first_touch_at = pv.timestamp
19 )
20 --count the rows to determine how many first touches are attributed to
   each campaign and source
21 SELECT ft_attr.utm_source AS Source,
22        ft_attr.utm_campaign AS Campaign,
23        COUNT(*) AS Count
24 FROM ft_attr
25 GROUP BY 1, 2
26 ORDER BY 3 DESC;
```

Query Results		
Source	Campaign	Count
medium	interview-with-cool-tshirts-founder	622
nytimes	getting-to-know-cool-tshirts	612
buzzfeed	ten-crazy-cool-tshirts-facts	576
google	cool-tshirts-search	169

The first touch for each user can be found by identifying which campaign had the earliest timestamp (i.e. the first campaign that they interacted with). In total, there were 1,979 visitors.

Four campaigns were responsible for all the first touches, and each of these had a different source. It seems that the brand's articles in various news sources are a very valuable way of attracting users to the site, as these were the top 3 campaigns for first touch.

What is the user journey – last touches by campaign?

```
1 --What is the user journey?
2 --4. How many last touches is each campaign responsible for?
3 --create a temporary table (last_touch) that finds the latest timestamp
  for each user id
4 WITH last_touch AS (
5     SELECT user_id,
6           MAX(timestamp) AS 'last_touch_at'
7     FROM page_visits
8     GROUP BY user_id),
9 --create another temporary table that adds source and campaign colums by
  joining last_touch to page_visits table on user_id and timestamp
10 lt_attr AS (
11     SELECT lt.user_id,
12           lt.last_touch_at,
13           pv.utm_source,
14           pv.utm_campaign
15     FROM last_touch lt
16     JOIN page_visits pv
17       ON lt.user_id = pv.user_id
18       AND lt.last_touch_at = pv.timestamp
19 )
20 --count the rows to determine how many last touches are attributed to
  each campaign and source
21 SELECT lt_attr.utm_source AS Source,
22       lt_attr.utm_campaign AS Campaign,
23       COUNT(*) AS Count
24 FROM lt_attr
25 GROUP BY 1, 2
26 ORDER BY 3 DESC;
```

Query Results		
Source	Campaign	Count
email	weekly-newsletter	447
facebook	retargeting-ad	443
email	retargeting-campaign	245
nytimes	getting-to-know-cool-tshirts	232
buzzfeed	ten-crazy-cool-tshirts-facts	190
medium	interview-with-cool-tshirts-founder	184
google	paid-search	178
google	cool-tshirts-search	60

The last touch for each user can be found by identifying which campaign had the latest timestamp (the last campaign a user interacted with)

All 8 campaigns were responsible for some last touches, but the most successful sources were email (weekly newsletter and retargeting-campaign) and a retargeting-ad on facebook. This suggests that when a user first visits the site, the company collects email subscriptions. I would also assume that information about the pages that a user visits is collected to make sure that both the email and facebook retargeting campaigns show relevant information (for example, images of products that the user viewed).

What is the user journey – how many visitors purchase?

```
1  --5. How many visitors make a purchase?
2  --count the number of users that make a purchase by counting the
   distinct user ids that visit the purchase page
3  SELECT COUNT(DISTINCT user_id) AS 'Makes Purchase'
4  FROM page_visits
5  WHERE page_name = '4 - purchase';
6
7  --6. How many last touches on the purchase page is each campaign
   responsible for?
8  --create a temporary table (last_touch) that finds the latest timestamp
   for each user id. Add where clause to only include last touches that
   were on the purchase page
9  WITH last_touch AS (
10     SELECT user_id,
11            MAX(timestamp) as last_touch_at
12     FROM page_visits
13     WHERE page_name = '4 - purchase'
14     GROUP BY user_id),
15  lt_attr AS (
16     SELECT lt.user_id,
17            lt.last_touch_at,
18            pv.utm_source,
19            pv.utm_campaign
20     FROM last_touch lt
21     JOIN page_visits pv
22       ON lt.user_id = pv.user_id
23       AND lt.last_touch_at = pv.timestamp
24  )
25  SELECT lt_attr.utm_source AS Source,
26         lt_attr.utm_campaign AS Campaign,
27         COUNT(*) AS Count
28  FROM lt_attr
29  GROUP BY 1, 2
30  ORDER BY 3 DESC;
```

Query Results		
Makes Purchase		
361		
Source	Campaign	Count
email	weekly-newsletter	115
facebook	retargetting-ad	113
email	retargetting-campaign	54
google	paid-search	52
buzzfeed	ten-crazy-cool-tshirts-facts	9
nytimes	getting-to-know-cool-tshirts	9
medium	interview-with-cool-tshirts-founder	7
google	cool-tshirts-search	2

By finding cases where the max timestamp was on the purchase page, we can identify which campaigns and sources were responsible for users making a purchase. There were 361 purchasers (CR of 361/1979=18.2%)

4 campaigns accounted for 93% of all the purchases (weekly-newsletter, retargetting-ad, retargetting-campaign, paid-search)

What is the user journey – from first touch to purchase?

Source	Campaign	First Touches	Last Touches	Purchases	% First touches	% Last touches	% Purchase
email	weekly-newsletter	0	447	115	0%	23%	32%
facebook	retargetting-ad	0	443	113	0%	22%	31%
email	retargetting-campaign	0	245	54	0%	12%	15%
google	paid-search	0	232	52	0%	12%	14%
buzzfeed	ten-crazy-cool-t-shirt facts	576	190	9	29%	10%	2%
nytimes	getting-to-know-cool-tshirts	612	184	9	31%	9%	2%
medium	interview-with-cool-tshirts-founder	622	178	7	31%	9%	2%
google	cool-tshirts-search	169	60	2	9%	3%	1%

Retargetting campaign

Awareness campaign

All users come to site through 4 'awareness' campaigns. Of these users, 31% do not return, however, 7% make a purchase on this first visit.

The remaining 69% of users are re-engaged by 4 'retargeting' campaigns. Of these users, 24.4% of them go on to make a purchase. 93% of all purchases are generated by these retargeting campaigns.

When a user visits the site, they have the option of subscribing to an email list, and as a source, email is responsible for 35% of last touches and 47% of all purchases.

Data is also collected about the pages/products a user visits and used to serve relevant retargeting ads on facebook. The retargeting-ad campaign is responsible for 22% of all last touches and 31% of all purchases.

3. Optimise the campaign budget

Which five campaigns should Cool Tshirts invest in?

Source	Campaign	First Touches	Last Touches	Purchases	% First touches	% Last touches	% Purchase
email	weekly-newsletter	0	447	115	0%	23%	32%
facebook	retargetting-ad	0	443	113	0%	22%	31%
email	retargetting-campaign	0	245	54	0%	12%	15%
google	paid-search	0	232	52	0%	12%	14%
buzzfeed	ten-crazy-cool-t-shirt facts	576	190	9	29%	10%	2%
nytimes	getting-to-know-cool-tshirts	612	184	9	31%	9%	2%
medium	interview-with-cool-tshirts-founder	622	178	7	31%	9%	2%
google	cool-tshirts-search	169	60	2	9%	3%	1%

Retargetting campaign

Awareness campaign

Healthy upper funnel metrics are very important, so I would suggest investing in the 3 article awareness campaigns to increase the initial number of visitors to site (Ten-crazy-cool-shirt-facts, getting-to-know-cool-tshirts and interview-with-cool-tshirts-founder)

We would expect that 70% of visitors who initially come to the site through these campaigns would re-engage through another retargeting campaign.

Email is a successful retargeting channel for the brand, so I would suggest adding additional sign up locations on site to increase the size of the subscriber base. I wouldn't invest in the weekly newsletter, as it is already a successful campaign but instead I would invest in the retargeting-campaign. Investing in new technologies such as smart recommendations algorithms could further improve the visit and conversion rate from this campaign. Investing in testing tools such as subject line testing or send time optimisation could help improve the open and visit rates.

I would also choose to invest in the retargeting-ad. This is currently only run on facebook, but with more investment this could also run on other sites. We can see that visitors of Cool Tshirts use news sites such as buzzfeed, nytimes and medium, so additional ads could be placed on sites such as this. Again, a smart recommendations algorithm or new imagery could help improve the click through rate of this campaign.