



First- and Last-Touch Attribution

Learn SQL from Scratch

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1. Getting Familiar with CoolTShirts

1.1 Distinct Campaigns and Sources

- CoolShirts has **8 distinct UTM campaigns** and **6 distinct UTM sources**. They can be found in the table to the right.
- An **UTM source** is **the touchpoint** that sent the traffic to CoolShirts.com- like email, or a specific website. In this case, they are *Buzzfeed, email, Facebook, Medium, and NYTimes*.
- An **UTM campaign** is **the specific ad/e-mail blast/etc.** that sent the traffic. Each campaign appears on a source, and a source can have several different campaigns. We can see CoolShirts received traffic from:
 - A ten-crazy-cool-tshirts-facts article on **Buzzfeed**
 - A retargetting-ad on **Facebook**
 - An interview-with-cool-tshirts-founder on **Medium**
 - A getting-to-know-cool-tshirts article on **NYTimes**
 - A weekly-newsletter and a retargetting-campaign sent over email
 - A paid-search and a cool-tshirts-search on Google

utm_campaign	utm_source
ten-crazy-cool-tshirts-facts	buzzfeed
weekly-newsletter	email
retargetting-campaign	email
retargetting-ad	facebook
paid-search	google
cool-tshirts-search	google
interview-with-cool-tshirts-founder	medium
getting-to-know-cool-tshirts	nytimes

2. The User Journey

2.1 First Touches Per Campaign

People tend to first land on the CoolTShirts website from the marketing touchpoints in the table below (as obtained from the query on the right).

- The vast majority (91.5%) visit CoolTShirts by following a link from a news website (Medium, NYTimes, and BuzzFeed – in that order, although the numbers are similar to each other.)
- The other ~8.5% arrive at the website after directly searching for Cool T-Shirts on Google.

utm_source	utm_campaign	ft_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

```
WITH first_touch AS (  
  SELECT user_id,  
         MIN(timestamp) AS first_touch_at  
  FROM page_visits  
  GROUP BY user_id),  
  
ft_attr AS (  
  SELECT ft.user_id,  
         ft.first_touch_at,  
         pv.utm_source,  
         pv.utm_campaign  
  FROM first_touch ft  
  JOIN page_visits pv  
    ON ft.user_id = pv.user_id  
   AND ft.first_touch_at = pv.timestamp)  
  
SELECT utm_source,  
       utm_campaign,  
       COUNT(*) AS ft_count  
FROM ft_attr  
GROUP BY 1, 2  
ORDER BY 3 DESC;
```

2.2 Last Touches Per Campaign

The last touches, as seen in the campaign below, are somewhat more varied.

- 57% of them come from email or Facebook ads.
- The e-mail weekly newspaper is the touchpoint with the most last-touch traffic (22.6%), with the Facebook retargeting ad being almost as effective.
- All the articles generating first touches do about as well as each other as last-touch touchpoints.
- A simple Google search is, by far, the least popular last-touch point.

utm_source	utm_campaign	lt_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

```
WITH last_touch AS (  
  SELECT user_id,  
         MAX(timestamp) AS last_touch_at  
  FROM page_visits  
  GROUP BY user_id),  
  
lt_attr AS (SELECT lt.user_id,  
                  lt.last_touch_at,  
                  pv.utm_source,  
                  pv.utm_campaign  
  FROM last_touch lt  
  JOIN page_visits pv  
    ON lt.user_id = pv.user_id  
   AND lt.last_touch_at = pv.timestamp)  
  
SELECT utm_source, utm_campaign,  
       COUNT(*) AS lt_count  
FROM lt_attr  
GROUP BY 1, 2  
ORDER BY 3 DESC;
```

2.3 Purchases

361 distinct users made a purchase.

- Of these, 63.2% came to the purchase page from the weekly newsletter and Facebook retargeting ad, both of which are almost equally effective.
- 29.4% more come from a combination of the email retargeting campaign and the Google paid search.
- Google searches and articles generated the remaining 8.4%.

utm_source	utm_campaign	lt_purchase_count
email	weekly-newsletter	115
facebook	retargeting-ad	113
email	retargeting-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

```
/* How many visitors make a purchase? */
SELECT COUNT(DISTINCT user_id)
FROM page_visits
WHERE page_name = '4 - purchase';

/* How many purchases per campaign? */
WITH last_touch AS (
    SELECT user_id,
           MAX(timestamp) AS last_touch_at
    FROM page_visits
    WHERE page_name = '4 - purchase'
    GROUP BY user_id),

lt_attr AS (SELECT lt.user_id,
                  lt.last_touch_at,
                  pv.utm_source,
                  pv.utm_campaign
    FROM last_touch lt
    JOIN page_visits pv
    ON lt.user_id = pv.user_id
    AND lt.last_touch_at = pv.timestamp)

SELECT utm_source, utm_campaign,
       COUNT(*) AS lt_purchase_count
FROM lt_attr
GROUP BY 1, 2
ORDER BY 3 DESC;
```


2.4 The Typical User Journey

To summarize what we learned on the last slides....

- Most users first come to the Cool T-Shirts website from articles on BuzzFeed, NYTimes, or Medium. For many of them, that visit is their last touch as well. Only a small percentage of those end up making a purchase from that. Instead...
- Most users visit the website for the last time from the weekly newsletter, a Facebook retargeting ad, or an e-mail retargeting ad. About one fourth of those will make a purchase.
- A paid search brings no users in for the first time, but led to a purchase in 52/178 visitors – so the second-most common user journey must be hearing about Cool T-Shirts somewhere else, then rediscovering them through a paid ad and making a purchase.
- There is a negligible number of users who search for “Cool T-Shirts” and arrive at the website.

3. Optimizing the Campaign Budget

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3.1 Five Campaigns to Reinvest In

1. The weekly newsletter, and 2. The Facebook retargeting ad

These consistently bring in the highest number (by far) of last touches and purchases, so they are responsible for the most income to Cool T-Shirts. Obviously, then, they should be continued. I would choose not to reinvest in the e-mail retargeting ad as it performs more poorly than the other retargeting ad **and** the other e-mail communication: instead, we should focus on the ones that are similar, yet give better results. Perhaps some aspects of it can be integrated into the other ones?

3. The NYTimes article and 4. The Buzzfeed article

These perform the best at getting a high number of people visiting the Cool T-Shirts website for the first time, making them aware of its existence, and therefore giving us the ability to re-target them with other campaigns. While the Medium article also does this, it does the worst out of all of them in last touches and purchases, so it should probably be cut out of a list of five campaigns to make room for...

5. The paid search

This has the highest rate of purchases per last-touch attribution: out of the 178 people who visit the website for the last time due to a paid search, 52 make a purchase. That's 30% - a better rate than any of the retargeting campaigns. Investing more in this might lead to more people seeing the search, which means more purchases overall.