



First- and Last-Touch Attribution with CoolTShirts.com

Learn SQL from Scratch

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1. Getting to Know CoolTShirts

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

utm_campaign is an advertising message that CoolTShirts is using to target potential customers. There are 8 campaigns in total.

utm_source is the platform where the campaign advertisement appears, such as in an email, Facebook, Google search, etc. There are 6 sources in total.

In this case, there is only one source for each campaign, but in other scenarios, there could be multiple sources for each campaign.

```
1  --1. Counts number of unique campaigns
2  SELECT COUNT (DISTINCT utm_campaign) AS 'campaign_count'
3  FROM page_visits;
4  --Counts number of unique sources
5  SELECT COUNT (DISTINCT utm_source) AS 'source_count'
6  FROM page_visits;
7  --Selects source used for each campaign
8  SELECT DISTINCT utm_campaign AS Campaigns,
9      utm_source AS Sources
10 FROM page_visits;
```

campaign_count
8

source_count
6

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

1.2 What pages are on the CoolTShirts website?

Using a SELECT DISTINCT command for page_name gives us all unique pages on the CoolTShirts website. There are 4 pages in total: landing_page, shopping_cart, checkout, and purchase. Different campaigns lead to different web pages, depending on the goal of the campaign.

```
12  --2. Selects unique pages on the website
13  SELECT DISTINCT page_name AS 'Pages'
14  FROM page_visits;
```

Pages
1 - landing_page
2 - shopping_cart
3 - checkout
4 - purchase

2. What is the user journey?

2.1 How many first touches is each campaign responsible for?

By using a MIN(timestamp) for each user id, we can determine the first touch point for each user. After joining the first_touch and page_visits tables, we can then count how many first touches each campaign and source combination is responsible for.

Only 4 out of the 8 campaigns were first touch points for users. The *Interview with CoolTShirts Founder* campaign on the Medium website and the *Getting to Know CoolTShirts* campaign on The NYTimes website had the most first touches.

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

```
16 --3. Counts number of first touches per campaign
17 --Creates temporary table that shows first touch
   for each user id
18 WITH first_touch AS (
19     SELECT user_id,
20         MIN(timestamp) AS first_touch_at
21     FROM page_visits
22     GROUP BY user_id),
23 --Creates temporary table that joins first_touch
   and page_visits tables
24 ft_attr AS (
25     SELECT ft.user_id,|
26         ft.first_touch_at,
27         pv.utm_source,
28         pv.utm_campaign
29     FROM first_touch ft
30     JOIN page_visits pv
31         ON ft.user_id = pv.user_id
32         AND ft.first_touch_at = pv.timestamp
33 )
34 --Selects campaign and source from each first touch
   and counts total number
35 SELECT ft_attr.utm_source AS Source,
36     ft_attr.utm_campaign AS Campaign,
37     COUNT (*) AS Count
38 FROM ft_attr
39 GROUP BY 1, 2
40 ORDER BY 3 DESC;
```

2.2 How many last touches is each campaign responsible for?

By using a MAX(timestamp) for each user id, we can determine the last touch point for each user. After joining the last_touch and page_visits tables, we can then count how many last touches each campaign and source combination is responsible for.

All 8 campaigns were last touch points for users. *The Weekly Newsletter* campaign via email and the *Retargeting Ad* campaign via Facebook had the most last touches.

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

```
42 --4. Counts number of last touches per campaign
43 --Creates temporary table that shows last touch
   for each user id
44 WITH last_touch AS (
45     SELECT user_id,
46         MAX(timestamp) AS last_touch_at
47     FROM page_visits
48     GROUP BY user_id),
49 --Creates temporary table that joins last_touch
   and page_visits tables
50 lt_attr AS (
51     SELECT lt.user_id,
52         lt.last_touch_at,
53         pv.utm_source,
54         pv.utm_campaign
55     FROM last_touch lt
56     JOIN page_visits pv
57         ON lt.user_id = pv.user_id
58         AND lt.last_touch_at = pv.timestamp
59 )
60 --Selects campaign and source from each last
   touch and counts total number
61 SELECT lt_attr.utm_source AS Source,
62     lt_attr.utm_campaign AS Campaign,
63     COUNT(*) AS Count
64 FROM lt_attr
65 GROUP BY 1, 2
66 ORDER BY 3 DESC;
```


2.3 How many visitors make a purchase?

Using a `SELECT COUNT(DISTINCT)` command for `user_id` gives us all unique users who visited the purchase page of the CoolTShirts website. Out of 1,979 unique CoolTShirts website visitors, 361 visited the purchase page and made a purchase.

```
68 --5. Counts number of unique users who made a purchase
69 SELECT COUNT (DISTINCT user_id) AS 'visitors_who_purchase'
70 FROM page_visits
71 WHERE page_name = '4 - purchase';
```

visitors_who_purchase
361

2.4 How many last touches on the purchase page is each campaign responsible for?

By using a MAX(timestamp) for each user id and by adding a WHERE clause to show only users from the purchase page, we can determine the last touch point for each user from the purchase page. After joining the last_touch and page_visits tables, we can then count how many last touches each campaign and source combination is responsible for on the purchase page.

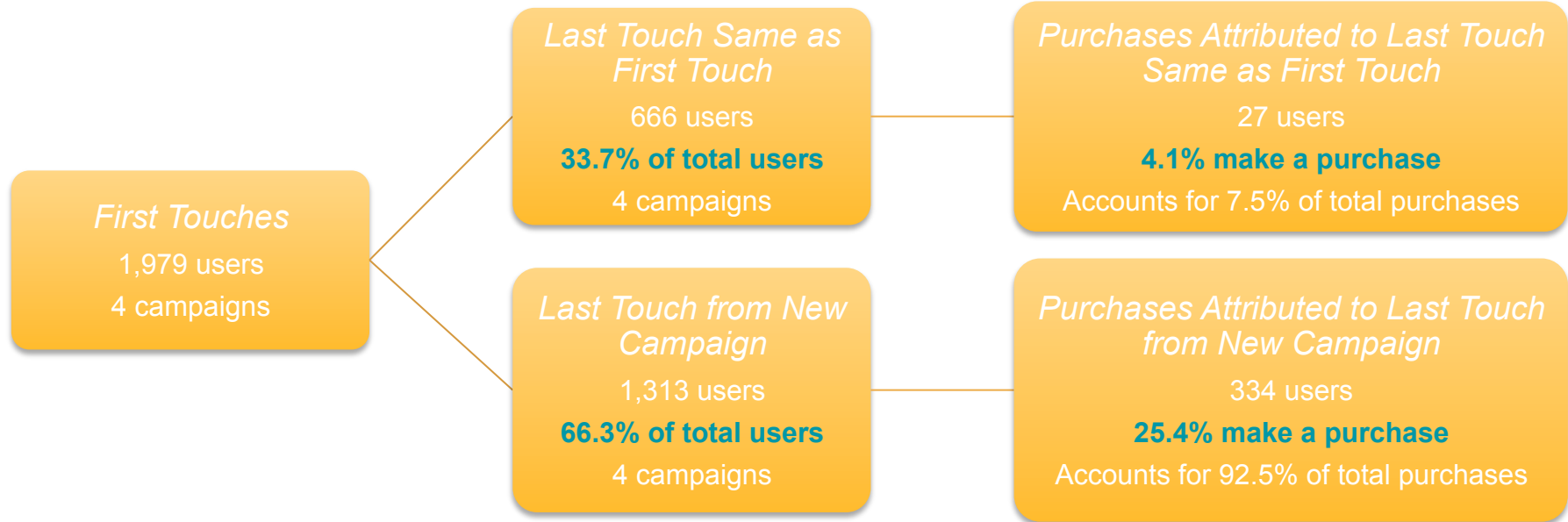
All 8 campaigns were last touch points for users on the purchase page. The *Weekly Newsletter* campaign via email and the *Retargeting Ad* via Facebook had the most last touches.

Source	Campaign	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

```
73 --6. Counts number of last touches on the purchase page
74 --that each campaign is responsible for
75 --Creates temporary table that shows last touch for
76 --each user id, adding a WHERE clause to show only users
77 --from the purchase page
78 WITH last_touch AS (
79     SELECT user_id,
80            MAX(timestamp) AS last_touch_at
81     FROM page_visits
82     WHERE page_name = '4 - purchase'
83     GROUP BY user_id),
84 --Creates temporary table that joins last_touch and
85 --page_visits tables
86 lt_attr AS (
87     SELECT lt.user_id,
88            lt.last_touch_at,
89            pv.utm_source,
90            pv.utm_campaign
91     FROM last_touch lt
92     JOIN page_visits pv
93     ON lt.user_id = pv.user_id
94     AND lt.last_touch_at = pv.timestamp
95 )
96 --Selects campaign and source from each last touch and
97 --count total number
98 SELECT lt_attr.utm_source AS Source,
99        lt_attr.utm_campaign AS Campaign,
100        COUNT (*) AS Count
101 FROM lt_attr
102 GROUP BY 1, 2
103 ORDER BY 3 DESC;
```

2.5 What is the typical user journey?

Total # of Purchases Across All Campaigns = 361



- Step 1: The CoolTShirts user journey starts with 1,979 users exposed to 1 of 4 campaigns as the first touch point.
- Step 2: Approx. 1/3 of users have this first touch point as their last touch point, while approx. 2/3 of users are exposed to a new campaign for their last touch point.
- Step 3: 4.1% of users where first touch=last touch make a purchase. 25.4% of users exposed to a new campaign make a purchase.

It is clear that a second attempt to target users leads to higher purchase rates. This accounts for 92.5% of total purchases.

3. Optimize the Campaign Budget

3. Optimize the Campaign Budget

To determine the optimal campaign budget, we must consider % first touches, % last touches, and % purchases from each campaign.

Source	Campaign	% First Touches	% Last Touches	% Purchases
medium	interview-with-cool-tshirts-founder	31.4%	9.3%	1.9%
nytimes	getting-to-know-cool-tshirts	30.9%	11.7%	2.5%
buzzfeed	ten-crazy-cool-tshirts-facts	29.1%	9.6%	2.5%
google	cool-tshirts-search	8.5%	3.0%	0.6%
email	weekly-newsletter	0%	22.6%	31.9%
facebook	retargeting-ad	0%	22.4%	31.3%
email	retargeting-campaign	0%	12.4%	15.0%
google	paid-search	0%	9.0%	14.4%

*Percentages may not add up to exactly 100% due to rounding.

Key Takeaways

- All 3 first touch campaigns related to the CoolTShirts brand story have similarly successful % first touches.
- The CoolTShirts Google search campaign is clearly underperforming at just 8.5% of first touches. We should remove this campaign moving forward.
- The email weekly newsletter and the Facebook retargeting ad are the highest performing last touches.
- There is a significant drop from these top 2 last touch campaigns to the next ones, from the 22-23% range to the 11.5-12.5% range. We should only focus on these top 2 for last touches moving forward.
- The email weekly newsletter and the Facebook retargeting ad were also responsible for the highest % in purchases.
- There is also a significant drop from these top 2 campaigns to the next ones, from the 31-32% range to the 14-15% range. We should only focus on these top 2 for purchases moving forward.

3. Optimize the Campaign Budget Continued

Source	Campaign	% First Touches	% Last Touches	% Purchases
medium	interview-with-cool-tshirts-founder	31.4%	9.3%	1.9%
nytimes	getting-to-know-cool-tshirts	30.9%	11.7%	2.5%
buzzfeed	ten-crazy-cool-tshirts-facts	29.1%	9.6%	2.5%
google	cool-tshirts-search	8.5%	3.0%	0.6%
email	weekly-newsletter	0%	22.6%	31.9%
facebook	retargeting-ad	0%	22.4%	31.3%
email	retargeting-campaign	0%	12.4%	15.0%
google	paid-search	0%	9.0%	14.4%

*Percentages may not add up to exactly 100% due to rounding.

Key Takeaways

Based on the prior analysis, 5 campaigns stand out as the highest performers:

- Interview with CoolTShirts Founder
- Getting to Know CoolTShirts
- Ten Crazy CoolTShirts Facts
- Weekly Newsletter
- Retargeting Ad

We should reinvest in these top 5 campaigns. The next question is how much money to spend on each.

- We know that the last touch oriented campaigns are the ones that are leading to the final conversions on purchase.
- However, we also know that the first touch oriented campaigns are a necessary precursor to the success of the last touch campaigns.
- Even though there are 3 first touch oriented campaigns and 2 last touch oriented campaigns, I would recommend splitting the budget 50/50 between first touch and last touch oriented ones to give more individual weight to the last touches that help with purchases.