



Capstone: Attribution Queries

Learn SQL from Scratch

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1. Get Familiar with Cool-T-Shirts

Marketing Campaigns

- CTS started a few marketing campaigns to increase website visits and purchases. By using touch attribution they aim to map their customers' journey: from initial visit to purchase and use this information to optimize their marketing techniques.
- The first step in mapping this data is to find out how many distinct campaigns and distinct sources CTS uses and how they are related.
- The campaigns and sources were retrieved from their page visits database.

| Query Results | |
|-------------------------------------|------------|
| COUNT(DISTINCT utm_campaign) | |
| 8 | |
| COUNT(DISTINCT utm_source) | |
| 6 | |
| utm_campaign | utm_source |
| 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 |

CoolTShirts.com

The website for Cool T Shirts contains 4 pages in total as listed below:

| page_name |
|-------------------|
| 1 - landing_page |
| 2 - shopping_cart |
| 3 - checkout |
| 4 - purchase |

2. What is the User Journey?

2.1 First Touch Attribution

First-touch attribution considers the 1st utm_source for each individual customer

- The first-touch query is shown to the right.
- The results for first-touch attribution are in the table below with the information on the utm_source, the utm_campaign that CTS ran, and the number of users that found the site from each campaign.

| ft_attr.utm_source | ft_attr.utm_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 |

```
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 ft_attr.utm_source,  
       ft_attr.utm_campaign,  
       COUNT(*)  
FROM ft_attr  
GROUP BY 1, 2  
ORDER BY 3 DESC;
```

2.2 Last Touch Attribution

Last-touch attribution considers the final `utm_source` for each individual customer before making their purchase

- The last-touch query is shown to the right.
- The results for last-touch attribution are in the table below with the information on the `utm_source`, the `utm_campaign` that CTS ran, and the number of users that found the site for the final time from each campaign.

| lt_attr.utm_source | lt_attr.utm_campaign | COUNT(*) |
|--------------------|-------------------------------------|----------|
| email | weekly-newsletter | 447 |
| facebook | retargetting-ad | 443 |
| email | retargetting-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 lt_attr.utm_source,  
       lt_attr.utm_campaign,  
       COUNT(*)  
FROM lt_attr  
GROUP BY 1, 2  
ORDER BY 3 DESC;
```


2.3 Number of Purchases

A count of the number of purchases made on the CTS website

- The query for purchases is shown to the right.
- The results for below shows the total number of purchases from the CTS website to be 361 during the marketing campaign.

```
SELECT COUNT(*)  
FROM page_visits  
WHERE page_name = '4 - purchase';
```

| COUNT(*) |
|----------|
| 361 |

2.4 Last Touches Leading to Purchases

Last-touches from each `utm_source` and `utm_campaign` that lead to a purchase from the CTS website

- The last-touch purchase query is shown on the right
- The results for last-touches that lead to purchases are in the table below.
- Counts the purchases attributed to each `utm_campaign` so that the CTS marketing can determine how to optimize their campaign budget.

| lt_attr.utm_source | lt_attr.utm_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 |

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

2.5 Typical User Journey

UTM Parameters capture when and how a user finds a website.

- First-touch attribution shows when a customer first lands on the website, and which utm_source led them to find the page.
- Last-touch attribution shows the final time that a customer lands on the website or returns to it from the first-touch
- By monitoring what leads the customers back to the website after first landing on it, CTS can determine which campaigns generate the most return traffic
- Finally, analyzing the number of sales from each campaign generates will help the marketing department determine which campaigns to pursue in the future.

| Top First-Touch utm_campaigns | Top Last-Touch utm-campaigns | Top Sales- Generating Last-Touch utm-campaigns | Number of Sales Generated by top Last-Touch Campaigns |
|-------------------------------|------------------------------|--|---|
| Interview with founder | Weekly email newsletter | Weekly email newsletter | 115 |
| NY Times CTS article | Facebook retargeting ad | Facebook retargeting ad | 113 |
| Buzz feed Ten crazy CTS facts | Email retargeting campaign | Email retargeting campaign | 54 |
| Google CTS search | NY Times CTS article | Paid Google search | 52 |

3. Optimize the Campaign Budget

3.1 Optimizing the Campaign Budget

Looking at the previous data (shown below) the marketing team can see which campaigns are their best bet to invest in.

- The 4 First-Touch campaigns that generated the most traffic to begin with were the 4 that generated the least sales as last-touch sites.
- The top 4 last-touch campaigns generated over 95.5% of the sales attributed to the overall CTS marketing campaign.
- Overall the retargeting ads and weekly newsletters generated the most sales.
- The marketing team must use this data to determine which 5 campaigns to re-invest in.

| Top First-Touch utm_campaigns | Top Last-Touch utm-campaigns | Top Sales- Generating Last-Touch utm-campaigns | Number of Sales Generated by top Last-Touch Campaigns |
|----------------------------------|------------------------------|---|--|
| Interview with founder | Weekly email newsletter | Weekly email newsletter | 115 |
| NY Times CTS article | Facebook retargeting ad | Facebook retargeting ad | 113 |
| Buzz feed Ten crazy CTS facts | Email retargeting campaign | Email retargeting campaign | 54 |
| Google CTS search | NY Times CTS article | Paid Google search | 52 |

3.21 Conclusions

- CoolTShirts can re-invest in 5 of their marketing campaigns.
- The top four sales-generating campaigns were: the weekly email newsletter, the Facebook retargeting ad, the email retargeting campaign, and the Google paid search. These should be four of the five campaigns that CTS reinvests in as they are responsible for 92.52% of their online sales.
- Two of the four top selling last-touch campaigns are retargeting campaigns and another is a weekly newsletter. In order for these to be effective CTS needs to generate new traffic to the website so they can retarget those initial visitors. That being said, CTS should choose from the top First-Touch generating campaigns.
- It is up to the marketing manager to decide whether to invest heavily in the retargeting ads and use only one first-touch campaign, or invest in more first-touch campaigns to generate more initial website traffic.



3.22 Conclusions Continued

- Seeing as the majority of the sales come from retargeting campaigns and email newsletters that each require initial contact, the marketing manager may want to invest in a mix of first and last touch generating marketing campaigns.
- However, repeatedly running the same article in the NY times will lead to diminishing returns as many of the same readers might disregard a repeat article if they have already read it.
- Further research must be done on the efficacy of the first-touch campaigns being repeatedly used.
- If I were the marketing manager I would lean heavy on the top four last-touch campaigns with the information gathered from the original 4 first-touch campaigns. For the 5th campaign I would continue to invest in the interview with the founder as it generated the most traffic to begin with.

