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1. Get Familiar with CoolTShirts

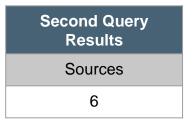# 1.1 How many campaigns and sources does CoolTShirts use and how are they related?

Using the page_visits database, two short queries were performed to determine the number of Campaigns and the number of Sources CoolTShirts has used:

- CoolTShirts has implemented eight campaigns. Campaigns are individual instances of marketing (i.e. a news article or advertisement).

- CoolTShirts has used six different sources for its campaigns. Sources are simply the 'medium' with which a campaign is implemented (i.e. a search engine or a social networking site).

First Query Results
Campaigns
8

Second Query Results
Sources
6

```
SELECT COUNT(DISTINCT utm_campaign) AS 'Campaigns'
FROM page_visits;


SELECT COUNT(DISTINCT utm_source) AS 'Sources'
FROM page_visits;
```

1.1 How many campaigns and sources does CoolTShirts use and how are they related? (cont.)

Next we create a query to show both fields side-by-side. Since there are more unique campaigns, we mark that field as 'Distinct'. We learn thus from the previous results and the new query:

- Due to six unique sources existing in the query results, it seems as though CoolTShirts may only use one source per campaign, but a source can be used for multiple campaigns (i.e. Google or email).

- The 'Getting-to-know-cool-tshirts', 'ten-crazy-cool-tshirts-facts', and 'interview-with-cool-tshirts-founder' campaigns are likely articles due to their identified sources. Their names are probably article titles.

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

```
SELECT DISTINCT utm_campaign,
          utm_source
FROM page_visits;
```

1.1 How many campaigns and sources does CoolTShirts use and how are they related? (cont.)

Due to the format of the previous query, it would be good to confirm that each campaign has only one source. The following query was run and the results confirm that assumption. Now we know this we can simplify future queries to not require the 'utm_source' information.

```
SELECT DISTINCT utm_campaign, COUNT(DISTINCT
            utm_source) AS 'Sources'
FROM page_visits
GROUP BY utm_campaign;
```

Query Results	
utm_campaign	utm_source
cool-tshirts-search	1
getting-to-know-cool-tshirts	1
interview-with-cool-tshirts-founder	1
paid-search	1
retargetting-ad	1
retargetting-campaign	1
ten-crazy-cool-tshirts-facts	1
weekly-newsletter	1

1.2 What pages are on the CoolTShirts website?

Performing a short query of the page_visits table, we find that CoolTShirts contains four unique pages:

1. Landing Page

2. Shopping Cart

3. Checkout

4. Purchase

```
SELECT DISTINCT page_name
FROM page_visits;
```

Query Results
page_name
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?

As indicated by the code below, 'first touches' were determined by counting the number of times a user first visited CoolTShirts for each campaign. It is noted that only half of all campaigns are responsible for first touches. It is also obvious from the results that the cool-tshirts-search Google campaign is responsible for far fewer first touches that the other three.

```
WITH first_touch AS (
    SELECT user_id,
        MIN(timestamp) AS first_touch_at
    FROM page_visits
    GROUP BY user_id)
SELECT pv.utm_campaign,
    COUNT(*) AS 'first_touch_total'
FROM first_touch ft
JOIN page_visits pv
    ON ft.user_id = pv.user_id
    AND ft.first_touch_at = pv.timestamp
GROUP BY pv.utm_campaign
ORDER BY 2;
```

Query Results	
utm_campaign	first_touch_total
cool-tshirts-search	169
ten-crazy-cool-tshirts-facts	576
getting-to-know-cool-tshirts	612
interview-with-cool-tshirts-founder	622

2.2 How many last touches is each campaign responsible for?

Similar to the query for 'first touches', 'last touches' were determined by counting the last time a user visited the CoolTShirts page via each campaign. All campaigns possessed 'last touches', with three of the four campaigns no possessing 'first touches' taking the top 3 spots. The fourth, 'paid-search', is second-to-last.

```
WITH last_touch AS (
    SELECT user_id,
        MAX(timestamp) AS last_touch_at
    FROM page_visits
    GROUP BY user_id)
SELECT pv.utm_campaign,
    COUNT(*) AS 'last_touch_total'
FROM last_touch lt
JOIN page_visits pv
    ON lt.user_id = pv.user_id
    AND lt.last_touch_at = pv.timestamp
GROUP BY pv.utm_campaign
ORDER BY 2;
```

Query Results	
utm_campaign	last_touch_total
cool-tshirts-search	60
paid-search	178
interview-with-cool-thshirts-founder	184
ten-crazy-cool-tshirts-facts	190
getting-to-know-cool-tshirts	232
retargetting-campaign	245
retargetting-ad	443
weekly-newsletter	447

2.3 How many visitors make a purchase?

Using the first query below, it was determined that 361 unique users had made a purchase. To put this in perspective, the second Query was run and it showed that 1,979 unique users have visited CoolTShirts. This means slightly more that 18% of users have made a purchase.

Query 1 Results
Purchasers
361

```
SELECT COUNT(DISTINCT user_id) AS 'Purchasers'
FROM page_visits
WHERE page_name = '4 - purchase';

SELECT COUNT(DISTINCT user_id) AS 'Users'
FROM page_visits;
```

Query 2 Results
Users
1979

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

We want to determine how many purchases each campaign is responsible for. Using the following code, the unique users that visited the purchase page were split up by 'last touch' campaign. The query results show a large gap between the four campaigns with the least, and the four campaigns with the most.

```
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)
SELECT pv.utm_campaign,
    COUNT(*) AS 'Purchases'
FROM last_touch lt
JOIN page_visits pv
    ON lt.user_id = pv.user_id
    AND lt.last_touch_at = pv.timestamp
GROUP BY pv.utm_campaign
ORDER BY 2;
```

Query Results	
utm_campaign	Purchases
cool-tshirts-search	2
interview-with-cool-tshirts-founder	7
getting-to-know-cool-tshirts	9
ten-crazy-cool-tshirts-facts	9
paid-search	52
retargetting-campaign	54
retargetting-ad	113
weekly-newsletter	115

2.5 What is the Typical User Journey?

From the results of the previous inquires, we can get a good picture of what typical users experience when coming to the Cool TShirts website:

- While employing eight campaigns, CoolTShirts only sees half of them bring in new users.

- The four 'first touch' campaigns are the lowest on the list for 'last touch' campaigns that ended in a purchase.

- We can then assume that new users brought in by these campaigns are not usually following through with a purchase.

- This means users performing a purchase have re-accessed the website through one of the retargeting campaigns or the paid Google search campaign some time after their initial access to the website.

3. Optimize the Campaign Budget

3.1 Cool T-Shirts can re-invest in 5 campaigns. Which should they pick and why?

To determine which campaigns to retain and why, we need to look at the 'first touch' and 'last touch on the purchase page' tables generated in previous slides. We are forgoing the last touch result, as the generation of sales is the end goal of CoolTShirts campaigns. Since CoolTShirts has not specified and priority between drawing users to the website and performing actual sales, we will try to weigh both results equally when determining which campaigns should be dropped.

The first campaign to be eliminated is the 'cool-tshirts-search' campaign. Though it provides some first touch results, it has the fewest of all campaigns that contribute to the amount of 'first touches'. It is also the lowest campaign in providing 'last touches' that result in a purchase.

The other two campaigns to be eliminated are the 'paid-search' and 'retargetting-campaign'. These are very similar in their 'last touch on the purchase page' total, and are the two lowest on that list after the 'first touch' campaigns. The reason that the remaining 'first touch' campaigns are kept is that they bring in roughly the same amount of new users, and thus would likely result in removing 1/3 of future sales if eliminated (assuming the elimination of the 'cool-tshirts-search' campaign).

Looking at 'last touch on purchase page'-only campaigns, the 'retargetting-ad' and 'weekly-newsletter' both have twice as many purchases as 'paid-search' and 'retargeting-campaign' combined. Thus, the five campaigns CoolTShirts.com should reinvest in are 'ten-crazy-cool-tshirts-facts', 'getting-to-know-cool-tshirts', 'interview-with-cool-thshirts-founder', 'retargeting-ad', and 'weekly-newsletter'.