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Learn SQL From Scratch

Lisa Alcock, January 8, 2019 Cohort

Warby Parker

Usage Funnels Capstone Project

Style Quiz

To follow the user's journey on the site & to calculate conversion rates, we're going to look at two marketing funnels: the Quiz Funnel and the Purchase Funnel.

First up, the Quiz Funnel. The quiz is comprised of 5 questions and to the right is a cursory look at what comprises the table: question, user id and response→

```
/*Question 1- What columns does the survey
table have?*/
SELECT *
FROM survey
LIMIT 10;
```

question	user_id	response
1. What are you looking for?	005e7f99-d48c-4fce-b605-10506c85aaf7	Women's Styles
2. What's your fit?	005e7f99-d48c-4fce-b605-10506c85aaf7	Medium
3. Which shapes do you like?	00a556ed-f13e-4c67-8704-27e3573684cd	Round
4. Which colors do you like?	00a556ed-f13e-4c67-8704-27e3573684cd	Two-Tone
1. What are you looking for?	00a556ed-f13e-4c67-8704-27e3573684cd	I'm not sure. Let's skip it.
2. What's your fit?	00a556ed-f13e-4c67-8704-27e3573684cd	Narrow
5. When was your last eye exam?	00a556ed-f13e-4c67-8704-27e3573684cd	<1 Year
3. Which shapes do you like?	00bf9d63-0999-43a3-9e5b-9c372e6890d2	Square
5. When was your last eye exam?	00bf9d63-0999-43a3-9e5b-9c372e6890d2	<1 Year
2. What's your fit?	00bf9d63-0999-43a3-9e5b-9c372e6890d2	Medium

Quiz Response Breakdown by Question

We can fine-tune our query and see how many users answered each question by counting the (rows) users for each question via this query→

```
/*Question 2 create a quiz funnel. what are the responses for each question?*/
SELECT question, COUNT(user_id)
FROM survey
GROUP BY question;
```

Which generates these results below.

question	COUNT(user_id)
1. What are you looking for?	500
2. What's your fit?	475
3. Which shapes do you like?	380
4. Which colors do you like?	361
5. When was your last eye exam?	270

Quiz Response Rate (Con’t)

question	COUNT(user_id)
1. What are you looking for?	500
2. What's your fit?	475
3. Which shapes do you like?	380
4. Which colors do you like?	361
5. When was your last eye exam?	270

The response rate for each question is calculated as: the number of people completing a step / number of people completing the previous step and is as follows:

1- 100%
2- 95%
3- 80%
4- 95%
5- 75%

People seem to quit the quiz during the 3rd and 5th question. Why? → →

Quiz Funnel Questions & Analysis

Why are there lower completion rates for the third and fifth questions? Possibilities:

- Users don’t know what shapes they like or, what is complementary to their face shape, or, there’s not enough choices and they don’t find an option that suits them.
- Users haven’t been to the eye doc in awhile (maybe they don’t have insurance too) or, didn’t know they needed a valid or up to date prescription to get frames.

question	COUNT(user_id)
1. What are you looking for?	500
2. What's your fit?	475
3. Which shapes do you like?	380
4. Which colors do you like?	361
5. When was your last eye exam?	270

Purchase Funnel

The second marketing funnel is Purchase Funnel. There are three parts to this funnel, Style Quiz → Home Try-on → Purchase.

In order to analyze, we needed to use “LEFT JOIN” on the three tables, Quiz + Home Try-On + Purchase & and use “DISTINCT” to pull unique (rows) values in the tables. →

```
SELECT DISTINCT q.user_id,
h.user_id IS NOT NULL AS 'is_home_try_on',
h.number_of_pairs,
p.user_id IS NOT NULL AS
 'is_purchase'
FROM quiz q
LEFT JOIN home_try_on h
   ON q.user_id = h.user_id
LEFT JOIN purchase p
ON p.user_id = q.user_id
LIMIT 10;
```

Query Results

user_id	is_home_try_on	number_of_pairs	is_purchase
4e8118dc-bb3d-49bf-85fc-cca8d83232ac	1	3 pairs	0
291f1cca-e507-48be-b063-002b14906468	1	3 pairs	1
75122300-0736-4087-b6d8-c0c5373a1a04	0	Ø	0
75bc6ebd-40cd-4e1d-a301-27ddd93b12e2	1	5 pairs	0
ce965c4d-7a2b-4db6-9847-601747fa7812	1	3 pairs	1
28867d12-27a6-4e6a-a5fb-8bb5440117ae	1	5 pairs	1
5a7a7e13-fbcf-46e4-9093-79799649d6c5	0	Ø	0
0143cb8b-bb81-4916-9750-ce956c9f9bd9	0	Ø	0
a4ccc1b3-cbb6-449c-b7a5-03af42c97433	1	5 pairs	0
b1dded76-cd60-4222-82cb-f6d464104298	1	3 pairs	0

← This query also let’s us remove NULL values and returns a True(1) or False (0) entry in the “is_home_try_on” column and the “is_purchase” column, which informs us whether or not the user has elected to try on frames at home and/or whether or not someone made a purchase. We can also see what users are in which group for A/B testing, either 3 or 5 pairs or NULL (b/c the value for home try-on was 0/False)...

A/B Testing & Purchase Rates

During the Home Try-On phase, we conducted an A/B test to see whether there was a difference in purchase rates between those who received 3 pairs or 5 pairs of frames (50% each). Building on the previous query, we alias that by creating a WITH query & refer to it in a new query & GROUP BY number of pairs. So, is there a difference? Yes! Those who received 5 pairs (294/371) had a purchase rate of 79%, compared to 3 pairs (201/379) at 53%. → →

```
WITH funnel AS
  (SELECT DISTINCT q.user_id, h.user_id IS
NOT NULL AS 'is_home_try_on',
h.number_of_pairs,
p.user_id IS NOT NULL AS
 'is_purchase'
FROM quiz q
LEFT JOIN home_try_on h
   ON q.user_id = h.user_id
LEFT JOIN purchase p
ON p.user_id = q.user_id
   )
SELECT number_of_pairs, SUM(is_home_try_on),
SUM(is_purchase)
FROM funnel

GROUP BY number_of_pairs;
```

number_of_pairs	SUM(is_home_try_on)	SUM(is_purchase)
Ø	0	0
3 pairs	379	201
5 pairs	371	294

Actionable Insights-Conversion Rates

Building on the previous query, we can also calculate the conversion rates from each stage--Quiz (browse) to Try-On & Try-On to Purchase which is 75% & 66% respectively → →

```
home try on to purchase.... */
WITH funnel AS
(
  SELECT DISTINCT q.user_id, h.user_id IS
NOT NULL AS 'is_home_try_on',
h.number_of_pairs,
p.user_id IS NOT NULL AS
 'is_purchase'
FROM quiz q
LEFT JOIN home_try_on h
   ON q.user_id = h.user_id
LEFT JOIN purchase p
ON p.user_id = q.user_id
 )
SELECT /*number_of_pairs,*/
COUNT(*) AS 'num_browse',
  SUM(is_home_try_on) AS 'num_try_on',
  SUM(is_purchase) AS 'num_purchase',
  1.0 * SUM(is_purchase) /
  SUM(is_home_try_on) AS
'try_on_to_purchase'
  FROM funnel;
```

Query Results

num_browse	num_try_on	num_purchase	browse_to_try_on	try_on_to_purchase
1000	750	495	0.75	0.66

Insights--Browse to Home Try-On to Purchase Rates by Pairs

Further, we can see the purchase percentages for 3 & 5 pairs by adding the number of pairs to the SELECT statement & grouping by it→

```
WITH funnel AS
(
  SELECT DISTINCT q.user_id, h.user_id IS NOT
NULL AS 'is_home_try_on',
h.number_of_pairs,
p.user_id IS NOT NULL AS
 'is_purchase'
FROM quiz q
LEFT JOIN home_try_on h
   ON q.user_id = h.user_id
LEFT JOIN purchase p
ON p.user_id = q.user_id
 )
SELECT number_of_pairs,
COUNT(*) AS 'num_browse',
  SUM(is_home_try_on) AS 'num_try_on',
  SUM(is_purchase) AS 'num_purchase',
  1.0 * SUM(is_purchase) /
  SUM(is_home_try_on) AS 'try_on_to_purchase'
 FROM funnel
 GROUP BY number_of_pairs;
```

number_of_pairs	num_browse	num_try_on	num_purchase	try_on_to_purchase
Ø	250	0	0	Ø
3 pairs	379	379	201	0.530343007915567
5 pairs	371	371	294	0.792452830188679

Other Insights, Product & Model Insights

There are 10 product IDs & 6 model names. We can also see what models are the best sellers:

```
/*Product ID & Model name*/

SELECT DISTINCT product_id, model_name
FROM purchase
ORDER BY product_id;
```

Query Results

product_id	model_name
1	Brady
2	Brady
3	Dawes
4	Dawes
5	Monocle
6	Olive
7	Lucy
8	Lucy
9	Eugene Narrow
10	Eugene Narrow

```
/*Most popular model purchased?*/
SELECT product_id, COUNT(model_name),
       model_name, style
FROM purchase
GROUP BY product_id
ORDER BY COUNT(model_name) DESC;
```

Query Results

product_id	COUNT(model_name)	model_name	style
3	63	Dawes	Men's Styles
10	62	Eugene Narrow	Women's Styles
9	54	Eugene Narrow	Women's Styles
1	52	Brady	Men's Styles
6	50	Olive	Women's Styles
4	44	Dawes	Men's Styles
7	44	Lucy	Women's Styles
2	43	Brady	Men's Styles
8	42	Lucy	Women's Styles
5	41	Monocle	Men's Styles

Style Quiz Insights

We can also view the most common answers to the style quiz by using MAX(response):

```
/*popular responses by question*/
SELECT question, MAX(response)
FROM survey
GROUP BY question;
```

Query Results

question	MAX(response)
1. What are you looking for?	Women's Styles
2. What's your fit?	Wide
3. Which shapes do you like?	Square
4. Which colors do you like?	Two-Tone
5. When was your last eye exam?	Not Sure. Let's Skip It

Sales Insights

And, we can see how much money was made based on the models purchased & SUM(price). While the Eugene Narrow was the most popular, the Dawes frames made the most money.

```
/*Number of models purchased & their
price & total sales for each*/
SELECT product_id, model_name,
COUNT(model_name), ROUND(price, 2),
SUM(price)
FROM purchase
GROUP BY model_name
ORDER BY COUNT(model_name) DESC;
```

Query Results

product_id	model_name	COUNT(model_name)	ROUND(price, 2)	SUM(price)
10	Eugene Narrow	116	95.0	11020
3	Dawes	107	150.0	16050
2	Brady	95	95.0	9025
7	Lucy	86	150.0	12900
6	Olive	50	95.0	4750
5	Monocle	41	50.0	2050

Summary

So, what did we learn?

-Users taking the quiz tend to drop off after question 3 & 5- (80% & 75%).

- A/B tests revealed that users who tried on 5 pairs at home had higher purchase rates (79%) than those that had 3 pairs to try on (53%).

-Browse to Try-On rate is 75%.

-Try-On to Purchase rate is 66%.

-Most popular model is Eugene Narrow ($11,020 in total sales) but the most profits came from the Dawes frames ($16,050). The Lucy frames were also high in sales ($12,090).

*After looking at the Warby Parker site, I see that home try-on is now only 5 pairs & the quiz now has 8 questions, rather than 5. So, I guess some analysis has already taken place! Yay, data!!