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Funnels with Warby Parker

Learn SQL from Scratch

Nick Dawkins

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Example Table of Contents

1. Get familiar with Warby Parker

1.1 Style Quiz

Warby Parker is a transformative lifestyle brand with a lofty objective: to offer designer eyewear at a revolutionary price while leading the way for socially conscious businesses.

To help users find the perfect pair of glasses they have designed a Style Quiz with 5 questions as follows:

1 - What are you looking for?
2 - What's your fit?
3 - What shapes do you like?
4 - What colours do you like?
5 - When was your last eye exam?

1.2 Survey Table

The quiz responses are recorded in a table called ‘survey’ and the table below gives the first 10 rows of data recorded, with the query used to produce it shown on the right. There are 3 columns in the ‘survey’ table: ‘question’ (which question from the quiz was asked), ‘user_id’ (the user ID that was asked the question) and ‘response’ (the response to the question)

```
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

2. What is the Quiz funnel?

2.1 Quiz funnel

As participants go through the quiz there is a possibility some may give up and not continue any further. We can calculate how many participants answer each question and show that in the table below. This is known as a funnel, with some users dropping out at each question and creating a funnel which users go through on the quiz. The SQL query for this is shown to the right

```
select question, count(distinct
user_id) as 'Total of users that
answered' from survey
group by 1;
```

question	Total of users that answered
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

2.2 Quiz funnel cont.

From the previous table we can then calculate the percentage of users that answer each question

Question number	*Percentage of users that answer*
1	***100%***
2	***95%***
3	***80%***
4	***95%***
5	***75%***

This shows us that question 3 (What shapes do you like?) and question 5 (When was your last eye exam?) have the lowest completion rates and is where participants are most likely to drop out of the quiz ‘funnel’.

This could be because people don’t tend to have favourite shapes (question 3) or participants can’t remember when they last had an eye exam or find questions concerning their health more sensitive and are less likely to answer (question 5)

3. A/B Testing with Home Try-On Funnel and Insights

3.1 Home Try-On and Data

After taking the quiz some users are then placed into an A/B test where 50% are given 3 pairs of glasses to try on at home and the other 50% are given 5 pairs. The data is stored in 3 tables: quiz, home_try_on and purchase.

quiz has 5 columns: user_id, style, fit, shape and color.
home_try_on has 3 columns: user_id, number_of_pairs and address.
purchase has 6 columns: user_id, product_id, style, model_name, color and price.
The first 5 rows of all 3 tables are shown below:

```
select * from quiz
limit 5;
```

user_id	style	fit	shape	color
4e8118dc-bb3d-49bf-85fc-cca8d83232ac	Women's Styles	Medium	Rectangular	Tortoise
291f1cca-e507-48be-b063-002b14906468	Women's Styles	Narrow	Round	Black
75122300-0736-4087-b6d8-c0c5373a1a04	Women's Styles	Wide	Rectangular	Two-Tone
75bc6ebd-40cd-4e1d-a301-27ddd93b12e2	Women's Styles	Narrow	Square	Two-Tone
ce965c4d-7a2b-4db6-9847-601747fa7812	Women's Styles	Wide	Rectangular	Black

```
select * from home_try_on
limit 5;
```

user_id	number_of_pairs	address
d8addd87-3217-4429-9a01-d56d68111da7	5 pairs	145 New York 9a
f52b07c8-abe4-4f4a-9d39-ba9fc9a184cc	5 pairs	383 Madison Ave
8ba0d2d5-1a31-403e-9fa5-79540f8477f9	5 pairs	287 Pell St
4e71850e-8bbf-4e6b-accc-49a7bb46c586	3 pairs	347 Madison Square N
3bc8f97f-2336-4dab-bd86-e391609dab97	5 pairs	182 Cornelia St

```
select * from purchase
limit 5;
```

user_id	product_id	style	model_name	color	price
00a9dd17-36c8-430c-9d76-df49d4197dcf	8	Women's Styles	Lucy	Jet Black	150
00e15fe0-c86f-4818-9c63-3422211baa97	7	Women's Styles	Lucy	Elderflower Crystal	150
017506f7-aba1-4b9d-8b7b-f4426e71b8ca	4	Men's Styles	Dawes	Jet Black	150
0176bfb3-9c51-4b1c-b593-87edab3c54cb	10	Women's Styles	Eugene Narrow	Rosewood Tortoise	95
01fdf106-f73c-4d3f-a036-2f3e2ab1ce06	8	Women's Styles	Lucy	Jet Black	150

3.2 Home Try-On Funnel

By combining the data from the tables we can create a new table that would show the path from start to finish in the purchasing funnel and will help us to better analyse the data. This new table is called ‘funnel’ and the first 10 rows are shown below with the query on the right.

user_id	is_home_try_on	number_of_pairs	is_purchase
4e8118dc	True	3	False
291f1cca	True	3	True
75122300	False	NULL	False
75bc6ebd	True	5	False
ce965c4d	True	3	True
28867d12	True	5	True
5a7a7e13	False	NULL	False
0143cb8b	False	NULL	False
a4ccc1b3	True	5	False
b1dded76	True	3	False

```
WITH funnel as
(
SELECT
SUBSTR(DISTINCT q.user_id, 1, 8) as
'user_id',
CASE
  WHEN h.user_id IS NOT NULL
  THEN 'True'
  ELSE 'False'
  END as 'is_home_try_on',
CASE
  WHEN SUBSTR(h.number_of_pairs, 1, 1)
is null
  THEN 'NULL'
  ELSE SUBSTR(h.number_of_pairs, 1, 1)
  END as 'number_of_pairs',
CASE
 WHEN p.user_id IS NOT NULL
 THEN 'True'
 ELSE 'False'
 END as 'is_purchase'
FROM quiz as 'q'
LEFT JOIN home_try_on as 'h'
   ON q.user_id = h.user_id
LEFT JOIN purchase as 'p'
   ON p.user_id = q.user_id
)
select * from funnel limit 10;
```

3.2 Insights

By performing the queries on the right we can analyse the data

No. of users completing quiz	*No. of users in A/B test*	*No. of users making a purchase*
1000	***750***	***495***

We can then express these numbers as percentages of users making their way through the funnel

% of users completing quiz	*% of users in A/B test*	*% of users making a purchase*
100%	***75%***	***66%***

```
WITH funnel as …
select count(*) from
funnel;

WITH funnel as …
select count(*) from
funnel where
is_home_try_on = 'True';

WITH funnel as …
select count(*) from
funnel where is_purchase =
'True';
```

3.3 A/B Test Insights

We can break this down further for the A/B test by seeing the differences between the two groups

A/B category	No. of users	No. of users making a purchase	% of users making a purchase
3	379	201	53.0%
5	371	294	79.2%

This shows us that users are significantly more likely to make a purchase when trying on 5 pairs as opposed to just 3.

Warby Parker should consider offering at least 5 pairs for home try-on and perhaps even consider doing another test where they allow users even more pairs to try at the home try-on phase, as the data so far suggests this will help improve their sales

```
WITH funnel as …
select count(*) from
funnel where
number_of_pairs = 3;

WITH funnel as …
select count(*) from
funnel where
number_of_pairs = 3 and
is_purchase = 'True';

WITH funnel as …
select count(*) from
funnel where
number_of_pairs = 5;

WITH funnel as …
select count(*) from
funnel where
number_of_pairs = 5 and
is_purchase = 'True';
```

3.4 Quiz Insights - Fit

By performing the queries on the right we can see what the most popular answers to the quiz were. The Style question data did not reveal much insight. However…

Fit response	*No. of quiz responses*	*No. of purchases*	*% of Responses to Purchases*
I'm not sure. Let's skip it	***89***	***45***	***50.6%***
Medium	***305***	***152***	***49.8%***
Narrow	***408***	***193***	***47.3%***
Wide	***198***	***105***	***53.0%***

```
select quiz.fit,
count(quiz.user_id),
count(purchase.user_id)
from quiz
left join purchase
on quiz.user_id =
purchase.user_id
  group by fit;
```

This shows us that wide frames are the least popular when users are surveyed and narrow the most popular. However it also shows that users who select wide fit in the quiz are more likely to then make a purchase.

3.5 Quiz Insights - Shape & Color

This shows us that round frames are the least popular frames when surveyed. Darby Parker should consider investing less in producing round shaped glasses

Shape Response	No. of quiz responses	No. of purchases	% of Responses to Purchases
No Preference	97	53	54.6%
Rectangular	397	189	47.6%
Round	180	95	52.8%
Square	326	158	48.5%

```
select quiz.shape,
count(quiz.user_id),
count(purchase.user_id)
from quiz
left join purchase
on quiz.user_id =
purchase.user_id
group by shape;
```

The color table below shows us that Neutral and Two-Tone colors are clearly the least popular, and even when users do suggest they like these colors they are then less likely to follow through and make a purchase. Warby Parker should place less emphasis on these colors going forwards and place more emphasis on black colors

Color Response	No. of quiz responses	No. of purchases	% of Responses to Purchases
Black	280	150	53.5%
Crystal	210	104	49.5%
Neutral	114	48	42.1%
Tortoise	292	144	49.3%
Two-Tone	104	49	47.1%

```
select quiz.color,
count(quiz.user_id),
count(purchase.user_id)
from quiz
left join purchase
on quiz.user_id =
purchase.user_id
group by quiz.color;
```

3.6 Purchase Insights

The table below breaks down purchases made by Product ID and therefore allows us to see which products are the most popular and least popular. Product ID 5 is the least popular product Warby Parker are selling and it also happens to be the cheapest. Meanwhile Product ID 3 is the most popular and is the joint most expensive.

This suggests Warby Parker's customers are looking to buy more premium range glasses and this is where the company should be investing, and cease looking to offer customers a more budget friendly option

Product ID	Style	Color	Price	Total Purchases
3	Men's Styles	Driftwood Fade	150	63
10	Women's Styles	Rosewood Tortoise	95	62
9	Women's Styles	Rose Crystal	95	54
1	Men's Styles	Layered Tortoise Matte	95	52
6	Women's Styles	Pearled Tortoise	95	50
4	Men's Styles	Jet Black	150	44
7	Women's Styles	Elderflower Crystal	150	44
2	Men's Styles	Sea Glass Gray	95	43
8	Women's Styles	Jet Black	150	42
5	Men's Styles	Endangered Tortoise	50	41

```
select product_id as
'Product ID', style as
'Style', color as 'Color',
price as 'Price', count(*)
as 'Total Purchases' from
purchase
group by product_id
order by 5 desc;
```