

CAPSTONE PROJECT: USAGE FUNNELS WITH WARBY PARKER



Learn SQL from Scratch

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1.GET FAMILIAR WITH WARBY PARKER

WARBY PARKER

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.

Founded in 2010 and named after two characters in an early Jack Kerouac journal, Warby Parker believes in creative thinking, smart design, and doing good in the world.

For every pair of eyeglasses and sunglasses sold, a pair is distributed to someone in need.

In this project, different Warby Parker's marketing funnels shall be analyzed in order to calculate conversion rates.



2.1 QUIZ FUNNEL

Task:

1. To help users find their perfect frame, Warby Parker has a Style Quiz that has the following questions:

"What are you looking for?"

"What's your fit?"

"Which shapes do you like?"

"Which colors do you like?"

"When was your last eye exam?"

The users' responses are stored in a table called survey.

- **Select all** columns from the first 10 rows.
- **What columns** does the table have?

SQL:

```
1  SELECT * FROM survey
2  LIMIT 10;
```

Output:

Query Results		
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

The table has the following columns:
question, user_id, response

2.2 QUIZ FUNNEL

Task:

2. Users will "give up" at different points in the survey. Let's analyze how many users move from Question 1 to Question 2, etc.

Create a quiz funnel using the GROUP BY command.

What is the number of responses for each question?

SQL:

```
1 SELECT
2   question AS 'Question',
3   COUNT(DISTINCT user_id) AS 'N. of responses'
4 FROM survey
5 GROUP BY 1
6 ORDER BY 1 ASC;
```

Output:

NUMBER OF RESPONSES

Query Results	
Question	N. of responses
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

2.3 QUIZ FUNNEL

Task:

3. Using a spreadsheet program like Excel or Google Sheets, calculate the percentage of users who answer each question.:

Which question(s) of the quiz have a lower completion rates?

What do you think is the reason?

Add this finding to your presentation slides!

Excel:

Question	N. of responses	Percent completing this question
1. What are you looking for?	500	100,00%
2. What's your fit?	475	95,00%
3. Which shapes do you like?	380	80,00%
4. Which colors do you like?	361	95,00%
5. When was your last eye exam?	270	74,79%
Total	1986	

Question 5 has the **lowest completion rate**

Question 3 has the **2nd lowest completion rate**

Some of the **reasons** might be that:

- In the case of question n. 3
 - People can't decide one specific shape that they prefer over the others
 - People might be first time buyers and haven't decided yet which shape they like
- In the case of question n. 5
 - Question reminded them that they've been putting off the eye exam
 - People have concerns over the use of their medical information
 - They could be buying sunglasses, and never had an eye exam

Funnel:

1. What are you looking for?

2. What's your fit?

3. Which shapes do you like?

4. Which colors do you like?

5. When was your last eye exam?

3.1 HOME TRY-ON FUNNEL

Task:

4. Warby Parker's purchase funnel is:
Take the Style Quiz → Home Try-On →
Purchase the Perfect Pair of Glasses
During the Home Try-On stage, we will be
conducting an A/B Test:
50% of the users will get 3 pairs to try on
50% of the users will get 5 pairs to try on
Let's find out whether or not users who get
more pairs to try on at home will be more
likely to make a purchase.
The data will be distributed across three
tables:
quiz
home_try_on
purchase
Examine the **first five rows** of each table
What are the **column names**?

SQL:

project.sqlite		Query Results				
		user_id	style	fit	shape	color
1	SELECT *	4e8118dc-bb3d-49bf-85fc-cca8d83232ac	Women's Styles	Medium	Rectangular	Tortoise
2	FROM quiz	291f1cca-e507-48be-b063-002b14906468	Women's Styles	Narrow	Round	Black
3	LIMIT 5;	75122300-0736-4087-b6d8-c0c5373a1a04	Women's Styles	Wide	Rectangular	Two-Tone
4		75bc6ebd-40cd-4e1d-a301-27ddd93b12e2	Women's Styles	Narrow	Square	Two-Tone
5		ce965c4d-7a2b-4db6-9847-601747fa7812	Women's Styles	Wide	Rectangular	Black

project.sqlite		Query Results		
		user_id	number_of_pairs	address
1	SELECT *	d8add87-3217-4429-9a01-d56d68111da7	5 pairs	145 New York 9a
2	FROM home_try_on	f52b07c8-abe4-4f4a-9d39-ba9fc9a184cc	5 pairs	383 Madison Ave
3	LIMIT 5;	8ba0d2d5-1a31-403e-9fa5-79540f8477f9	5 pairs	287 Pell St
4		4e71850e-8bbf-4e6b-acc4-49a7bb46c586	3 pairs	347 Madison Square N
5		3bc8f97f-2336-4dab-bd86-e391609dab97	5 pairs	182 Cornelia St

project.sqlite		Query Results					
		user_id	product_id	style	model_name	color	price
1	SELECT *	00a9dd17-36c8-430c-9d76-df49d4197dcf	8	Women's Styles	Lucy	Jet Black	150
2	FROM purchase	00e15fe0-c86f-4818-9c63-3422211baa97	7	Women's Styles	Lucy	Elderflower Crystal	150
3	LIMIT 5;	017506f7-aba1-4b9d-8b7b-f4426e71b8ca	4	Men's Styles	Dawes	Jet Black	150
4		0176bfb3-9c51-4b1c-b593-87edab3c54cb	10	Women's Styles	Eugene Narrow	Rosewood Tortoise	95
5		01fdf106-f73c-4d3f-a036-2f3e2ab1ce06	8	Women's Styles	Lucy	Jet Black	150

Column
names

3.2 HOME TRY-ON FUNNEL

Task:

5. We'd like to create a new table with the following layout:

user_id	is_home_try_on	number_of_pairs	is_purchase
4e8118dc	True	3	False
291f1cca	True	5	False
75122300	False	NULL	False

Each row will represent a single user from the browse table:

If the user has any entries in home_try_on, then is_home_try_on will be 'True'.

number_of_pairs comes from home_try_on table

If the user has any entries in is_purchase, then is_purchase will be 'True'.

Use a **LEFT JOIN** to combine the three tables, starting with the top of the funnel (browse) and ending with the bottom of the funnel (purchase). Select **only the first 10 rows** from this table (otherwise, the query will run really slowly).

SQL:

```
project.sqlite
1 SELECT DISTINCT q.user_id,
2     h.user_id IS NOT NULL AS 'is_home_try_on',
3     h.number_of_pairs,
4     p.user_id IS NOT NULL AS 'is_purchase'
5 FROM quiz q
6 LEFT JOIN home_try_on h
7     ON q.user_id = h.user_id
8 LEFT JOIN purchase p
9     ON p.user_id = q.user_id
10 LIMIT 10;
```

Output:

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	

3.3 HOME TRY-ON FUNNEL

Task:

6. Once we have the data in this format, we can analyze it in several ways:

We can calculate overall conversion rates by aggregating across all rows.

SQL:

```
1  WITH funnel AS (SELECT DISTINCT q.user_id,
2    h.user_id IS NOT NULL AS 'is_home_try_on',
3    h.number_of_pairs,
4    p.user_id IS NOT NULL AS 'is_purchase'
5  FROM quiz q
6  LEFT JOIN home_try_on h
7    ON q.user_id = h.user_id
8  LEFT JOIN purchase p
9    ON p.user_id = q.user_id)
10 SELECT
11   COUNT(user_id) AS 'N. of Users',
12   SUM(is_home_try_on) AS 'Home tries',
13   SUM(is_purchase) AS 'Purchases'
14 FROM funnel;
```

Output:

Query Results		
N. of Users	Home tries	Purchases
1000	750	495

3.4 HOME TRY-ON FUNNEL

Task:

6. Once we have the data in this format, we can analyze it in several ways:

We can compare conversion from quiz→home_try_on and home_try_on→purchase.

SQL:

```
1 WITH funnel AS (SELECT DISTINCT q.user_id,
2   h.user_id IS NOT NULL AS 'is_home_try_on',
3   h.number_of_pairs,
4   p.user_id IS NOT NULL AS 'is_purchase'
5 FROM quiz q
6 LEFT JOIN home_try_on h
7   ON q.user_id = h.user_id
8 LEFT JOIN purchase p
9   ON p.user_id = q.user_id)
10 SELECT
11   COUNT(user_id) AS 'N. of Users',
12   SUM(is_home_try_on) AS 'Home tries',
13   SUM(is_purchase) AS 'Purchases',
14   1.0 * SUM(is_home_try_on) / COUNT(user_id) AS 'Quiz to Home try',
15   1.0 * SUM(is_purchase) / SUM(is_home_try_on) AS 'Home try to Purchase'
16 FROM funnel;
```

Output:

Query Results				
N. of Users	Home tries	Purchases	Quiz to Home try	Home try to Purchase
1000	750	495	0.75	0.66

3.5 HOME TRY-ON FUNNEL

Task:

6. Once we have the data in this format, we can analyze it in several ways:

We can calculate the difference in purchase rates between customers who had 3 number_of_pairs with ones who had 5.

SQL:

```
1 WITH funnel AS (SELECT DISTINCT q.user_id,
2     h.user_id IS NOT NULL AS 'is_home_try_on',
3     h.number_of_pairs,
4     p.user_id IS NOT NULL AS 'is_purchase'
5 FROM quiz q
6 LEFT JOIN home_try_on h
7     ON q.user_id = h.user_id
8 LEFT JOIN purchase p
9     ON p.user_id = q.user_id)
10 SELECT
11     number_of_pairs AS 'N. of pairs',
12     COUNT(user_id) AS 'N. of Users',
13     SUM(is_home_try_on) AS 'Home tries',
14     SUM(is_purchase) AS 'Purchases',
15     1.0 * SUM(is_home_try_on) / COUNT(user_id)
16     AS 'Quiz to Home try',
17     1.0 * SUM(is_purchase) / SUM(is_home_try_on)
18     AS 'Home try to Purchase'
19 FROM funnel
20 GROUP BY 1
21 ORDER BY 1 DESC;
```

Output:

Query Results					
N. of pairs	N. of Users	Home tries	Purchases	Quiz to Home try	Home try to Purchase
5 pairs	371	371	294	1.0	0.792452830188679
3 pairs	379	379	201	1.0	0.530343007915567
Ø	250	0	0	0.0	Ø

3.6 HOME TRY-ON FUNNEL

Task:

6. Once we have the data in this format, we can analyze it in several ways:

We can also use the original tables to calculate things like:

The most common results of the style quiz.

The most common types of purchase made.

SQL:

```
1 SELECT
2   style,
3   COUNT(user_id) 'n. of users'
4 FROM quiz
5 GROUP BY 1
6 ORDER BY 2 DESC;
```

```
1 SELECT
2   product_id,
3   model_name,
4   COUNT(user_id) AS 'N. of purchases'
5 FROM purchase
6 GROUP BY 1
7 ORDER BY 3 DESC;
```

Output:

Query Results	
style	n. of users
Women's Styles	469
Men's Styles	432
I'm not sure. Let's skip it.	99

Query Results		
product_id	model_name	N. of purchases
3	Dawes	63
10	Eugene Narrow	62
9	Eugene Narrow	54
1	Brady	52
6	Olive	50
4	Dawes	44
7	Lucy	44
2	Brady	43
8	Lucy	42
5	Monocle	41

4.1 INSIGHTS

*Please note: for reasons of redundancy, SQL code is in the .sql file, under section 4

Survey data shows that the number of users who selected the women's styles are greater than the rest, however we can see that the percentage of users who opt to purchase a product after the home try are the highest amongs those who initially selected the men's styles, even though their total number of purchases are slightly lower.

It is also worth noting that users who weren't sure about the style, were the most reluctant to try a home kit, and even though more than 2/3 of them did, none have completed a purchase.

Query Results					
Styles	N. of Users	Home tries	Purchases	Quiz to Home %	Home try to Purchase %
Women's Styles	469	361	252	76.97	69.81
Men's Styles	432	320	243	74.07	75.94
I'm not sure. Let's skip it.	99	69	0	69.7	0.0

The most widely sold models are indicated above, however, the next slide will show that the earnings show a different percentage of company's income.

Query Results		
product_id	model_name	N. of purchases
3	Dawes	63
10	Eugene Narrow	62
9	Eugene Narrow	54
1	Brady	52
6	Olive	50
4	Dawes	44
7	Lucy	44
2	Brady	43
8	Lucy	42
5	Monocle	41

As for the A/B testing, it is worth noting that people who received 5 pairs had a much greater purchase rate than those who tried only 3 pairs (79,25% vs. 53,03%). It would indicate that the greater variety is much more appealing to customers and leads to the increase in sales.

Query Results					
N. of pairs	N. of Users	Home tries	Purchases	Quiz to Home try	Home try to Purchase
5 pairs	371	371	294	1.0	0.792452830188679
3 pairs	379	379	201	1.0	0.530343007915567

4.2 INSIGHTS

*Please note: for reasons of redundancy, SQL code is in the .sql file, under section 4

style	Total
Women's Styles	28670
Men's Styles	27125
Total sales	
55795	

In terms of earnings and prices, the situation is as follows:

- Most purchases belong to the 95 \$ segment, however, the highest earnings (EBITDA) are due to the 150\$ segment
- Most popular product is in the highest price segment of men's style, followed by 2 other of the 95\$ from women's style
- Women's styles report higher earnings than men's

Therefore, it appears that the men's styles contribute in the higher price range, while women's styles contribute more in the mid price but with higher number of products sold. It can be interpreted as the indication of the earning potential of the customers, divided by the types of styles selected.

Query Results			
Price	N. of Users	Home tries	Purchases
150	193	193	193
95	261	261	261
50	41	41	41

Query Results					
product_id	model_name	style	N. of purchases	price	EBITDA
3	Dawes	Men's Styles	63	150	9450
4	Dawes	Men's Styles	44	150	6600
7	Lucy	Women's Styles	44	150	6600
8	Lucy	Women's Styles	42	150	6300
10	Eugene Narrow	Women's Styles	62	95	5890
9	Eugene Narrow	Women's Styles	54	95	5130
1	Brady	Men's Styles	52	95	4940
6	Olive	Women's Styles	50	95	4750
2	Brady	Men's Styles	43	95	4085
5	Monocle	Men's Styles	41	50	2050

product_id	model_name	style	N. of purchases	price	EBITDA
3	Dawes	Men's Styles	63	150	9450
10	Eugene Narrow	Women's Styles	62	95	5890
9	Eugene Narrow	Women's Styles	54	95	5130
1	Brady	Men's Styles	52	95	4940
6	Olive	Women's Styles	50	95	4750
4	Dawes	Men's Styles	44	150	6600
7	Lucy	Women's Styles	44	150	6600
2	Brady	Men's Styles	43	95	4085
8	Lucy	Women's Styles	42	150	6300
5	Monocle	Men's Styles	41	50	2050