



Usage Funnels with Warby Parker

Capstone Project
Learn SQL from Scratch
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Table of Contents

1.) Get familiar with Warby Parker

- ▶ *-Style quiz and table familiarization*

2.) The Quiz Funnel

- ▶ *-Creating a quiz funnel using the GROUP BY command*
- ▶ *-Number of responses for each question*
- ▶ *-Quiz questions with lowest completion rates*

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

- ▶ *-Finding out who is more likely to make a purchase*
- ▶ *-Analyzing the data*
- ▶ *Actionable Insights*

1. Get familiar with Warby Parker

Get familiar with Warby Parker

To help users find their perfect frame, Warby Parker has a [Style Quiz](#) that has the following questions:

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?"

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

Select all columns from the first 10 rows. What columns does the table have? (*Answer: question, user_id, response*)

Usage Funnels with Warby Parker

Upgrade to Pro

project.sqlite

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

Query Results

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

2. The Quiz Funnel

The Quiz Funnel

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?

Usage Funnels with Warby Parker

Upgrade to Pro

project.sqlite

```
1 SELECT question, COUNT(*) AS respondents
2 FROM survey
3 GROUP BY question;
4
5
```

question	respondents
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 Quiz Funnel (Cont'd)

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?

= responses/responses to prior question

Quiz Question	Responses	Response Rate
1	500	100%
2	475	95%
3	380	80%
4	361	95%
5	270	75%

Query Results
question
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?

Questions #3 and #5 have a lower completion rate compared to the other questions. For question #3, it is possible respondents aren't sure yet before they try on the glasses which shape they prefer. As a result, they do not respond. Alternatively, they may want to choose multiple shapes and are unable to do so. For question #5, perhaps respondents could not recall their last eye exam or just got tired of answering questions.

3. A/B Testing with Home try-on Funnel

A/B Testing with Home Try-On Funnel

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? (A. *user_id*,
style, *fit*, *shape*, *color*)

project.sqlite		Query Results				
1	SELECT *	user_id	style	fit	shape	color
2	FROM quiz	b3d-49bf-85fc-cca8d83232ac	Women's Styles	Medium	Rectangular	Tortoise
3	LIMIT 5;	07-48be-b063-002b14906468	Women's Styles	Narrow	Round	Black
4		736-4087-b6d8-c0c5373a1a04	Women's Styles	Wide	Rectangular	Two-Tone
5	SELECT *	0cd-4e1d-a301-27ddd93b12e2	Women's Styles	Narrow	Square	Two-Tone
6	FROM home_try_on	e2b-4db6-9847-601747fa7812	Women's Styles	Wide	Rectangular	Black
7	LIMIT 5;	user_id	number_of_pairs	address		
8		217-4429-9a01-d56d68111da7	5 pairs	145 New York 9a		
9	SELECT *	abe4-4f4a-9d39-ba9fc9a184cc	5 pairs	383 Madison Ave		
10	FROM purchase	1a31-403e-9fa5-79540f8477f9	5 pairs	287 Pell St		
11	LIMIT 5;	8bbf-4e6b-acc-49a7bb46c586	3 pairs	347 Madison Square N		
12		336-4dab-bd86-e391609dab97	5 pairs	182 Cornelia St		
13		user_id	product_id	style	model_name	color
14		6c8-430c-9d76-df49d4197dcf	8	Women's Styles	Lucy	Jet Black
		6f-4818-9c63-342211baa97	7	Women's Styles	Lucy	Elderflower Cry
		a1-4b9d-8b7b-f4426e71b8ca	4	Men's Styles	Dawes	Jet Black
		51-4b1c-b593-87edab3c54cb	10	Women's Styles	Eugene Narrow	Rosewood Tort
		3c-4d3f-a036-2f3e2ab1ce06	8	Women's Styles	Lucy	Jet Black

A/B Testing with Home Try-On Funnel

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.

```
1 SELECT DISTINCT b.user_id,  
2 CASE  
3   WHEN c.user_id IS NOT NULL THEN 'True'  
4   ELSE 'False'  
5   END AS 'is_home_try_on',  
6   c.number_of_pairs,  
7   CASE  
8     WHEN p.user_id IS NOT NULL THEN 'True'  
9     ELSE 'False'  
10    END AS 'is_purchase'  
11 FROM quiz AS 'b'  
12  
13 LEFT JOIN home_try_on AS 'c'  
14   ON b.user_id = c.user_id  
15  
16 LEFT JOIN purchase AS 'p'  
17   ON c.user_id = p.user_id  
18 LIMIT 10;
```

Query Results

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

- 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'.

A/B Testing with Home Try-On Funnel

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.

```
1 WITH funnels AS (  
2   SELECT DISTINCT b.user_id,  
3     c.user_id IS NOT NULL AS 'is_home_try_on',  
4     c.number_of_pairs,  
5     p.user_id IS NOT NULL AS 'is_purchase'  
6   FROM quiz AS 'b'  
7   LEFT JOIN home_try_on AS 'c'  
8     ON c.user_id = b.user_id  
9   LEFT JOIN purchase AS 'p'  
10    ON p.user_id = c.user_id)  
11 SELECT COUNT(*) AS 'browsers',  
12    SUM(is_home_try_on) AS 'checkouts',  
13    SUM(is_purchase) AS 'purchasers'  
14 FROM funnels;
```

Query Results		
browsers	checkouts	purchasers
1000	750	495

A/B Testing with Home Try-On Funnel (Cont'd)

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

```
WITH funnels AS (  
  SELECT b.user_id,  
         c.user_id IS NOT NULL AS 'is_home_try_on',  
         c.number_of_pairs,  
         p.user_id IS NOT NULL AS 'is_purchase'  
  FROM quiz AS 'b'  
  LEFT JOIN home_try_on AS 'c'  
    ON c.user_id = b.user_id  
  LEFT JOIN purchase AS 'p'  
    ON p.user_id = c.user_id  
  SELECT COUNT(*) AS 'browsers',  
         SUM(is_home_try_on) AS 'checkouts',  
         SUM(is_purchase) AS 'purchasers',  
         1.0 * SUM(is_home_try_on) / COUNT(user_id) AS 'browse_to_checkout',  
         1.0 * SUM(is_purchase) / SUM(is_home_try_on) AS 'checkout_to_purchase'  
  FROM funnels;
```

Query Results				
browsers	checkouts	purchasers	browse_to_checkout	checkout_to_purchase
1000	750	495	0.75	0.66

Quiz to home try on = browsers to checkouts (75%)

Home try-on to purchase = checkout to purchase (66%)

A/B Testing with Home Try-On Funnel (Cont'd)

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

```
1 WITH funnels AS (  
2   SELECT DISTINCT b.user_id,  
3   c.user_id IS NOT NULL AS 'is_home_try_on',  
4   c.number_of_pairs,  
5   p.user_id IS NOT NULL AS 'is_purchase'  
6 FROM quiz AS 'b'  
7 LEFT JOIN home_try_on AS 'c'  
8   ON c.user_id = b.user_id  
9   AND number_of_pairs LIKE '3%'  
0 LEFT JOIN purchase AS 'p'  
1   ON p.user_id = c.user_id)  
2 SELECT COUNT(*) AS 'browsers',  
3 SUM (is_home_try_on) AS 'checkouts',  
4 SUM (is_purchase) AS 'purchasers',  
5 1.0 * SUM(is_home_try_on) / COUNT(user_id) AS 'browse_to_checkout',  
6 1.0 * SUM(is_purchase) / SUM(is_home_try_on) AS 'checkout_to_purchase'  
7 FROM funnels;
```

I ran this query twice and replaced '3%' with '5%' to get my results.

Those who tried on 3 pairs at home

Query Results				
browsers	checkouts	purchasers	browse_to_checkout	checkout_to_purchase
1000	379	201	0.379	0.530343007915567

Those who tried on 5 pairs at home

Query Results				
browsers	checkouts	purchasers	browse_to_checkout	checkout_to_purchase
1000	371	294	0.371	0.792452830188679

- 53% of those who tried on 3 pairs made a purchase
- 79% of those who tried on 5 pairs made a purchase

Actionable Insights

- Since the group who tried on 5 pairs vs. 3 pairs of glasses had 26% higher purchases, it makes sense to send potential buyers 5 pairs to try on to give more options. However, the cost of loss/damages could also increase and should be evaluated against higher purchase rates.
- It appears that rectangular is the most popular shape. This is an important insight to take into consideration for inventory planning.
- Currently, women probably make up your biggest population. The Dawes and Eugene Narrow are your most popular products. Apply this knowledge to Marketing efforts and inventory planning.

Query Results	
shape	COUNT(shape)
No Preference	97
Rectangular	397
Round	180
Square	326

Query Results	
style	COUNT(style)
I'm not sure. Let's skip it.	99
Men's Styles	432
Women's Styles	469

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

Cont'd on next slide...

Actionable Insights

- Black frames are trending right now! Consider offering more styles in black if they are not already available.

Query Results	
color	COUNT(color)
Jet Black	86
Driftwood Fade	63
Rosewood Tortoise	62
Rose Crystal	54
Layered Tortoise Matte	52
Pearled Tortoise	50
Elderflower Crystal	44
Sea Glass Gray	43
Endangered Tortoise	41

- Perhaps consider allowing multiple options for the quiz questions to get a deeper story into potential buyers. Also, storing individual preferences in a database to allow for customized future try-on options may be an added feature that could lead to repeat customers.