Warby Parker Usage Funnels

Learn SQL from Scratch

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Table of Contents

What’s in the table, anyway?

Understanding the table

Before diving into more complex queries, it's always good to take the time to understand the table you're working with. With a simple SELECT *, you can grab a snapshot of what columns and data are included.
**Using LIMIT to restrict the output is often important, especially when working with large datasets.*

```
SELECT *
FROM surveys
LIMIT 10;
```

question	user_id	response
What size?	——	Medium
What shape?	——	Round
What colors?	——	Two-Tone

How’s our style quiz performing?

Understanding survey churn

Using COUNT (DISTINCT) and GROUP BY, you can calculate the number of unique user_ids that complete each question. **Here, we've renamed COUNT (DISTINCT user_id) as 'distinct_answers' for better readability.*

```
SELECT question,
 COUNT(DISTINCT user_id) AS 'distinct_answers'
FROM survey
GROUP BY question;
```

question	distinct_answers
1. What are you looking for?	500
2. What's your fit?	475 **(95%)**
3. Which shapes do you like?	380 **(76%)**
4. What colors do you like?	361 **(72%)**
5. When was your last eye exam?	270 **(54%)**

By analyzing this data, you can see that 475 users (95%) progress from Question 1 to Question 2. As users continue through the survey, there is gradual churn. Question 5 has the lowest completion rate, likely due to its placement in the survey (last) as well as the nature of the question. While the first four questions are subjective in nature, Question 5 may require additional time to reference past appointment history, etc. The survey's overall completion rate comes out to 54%, lower than the national average according to Survey Monkey.

Getting the full picture

Understanding multiple tables

In order to JOIN multiple tables, it's imperative to first understand what columns are contained in each. This will allow us to identify the JOIN key. With a simple SELECT * of each table, we have the snapshot we need. User_id will be our JOIN key.

```
SELECT *
FROM quiz
LIMIT 5;
SELECT *
FROM home_try_on
LIMIT 5;
SELECT *
FROM purchase
LIMIT 5;
```

Quiz table				
user_id	style	fit	shape	color

Home_try_on table		
user_id	number_of_pairs	address

Purchase table					
user_id	product_id	style	model_name	color	price

Joining multiple tables

Using user_id as our JOIN key, we're able to create a query that tells us whether a user a) participated in a home try on b) how many pairs they tried on and c) purchased glasses.

For better readability, we can create a simple CASE statement to rename the results of home_try_on and purchase to "True" or "False." The second query accomplishes this for us.

As we did earlier, it's important to use LIMIT to ensure our query results aren't too large. When we run the actual conversion queries though, LIMIT should not be used (or else it will skew the data).

```
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;

SELECT
  DISTINCT q.user_id,
  CASE WHEN h.user_id IS NOT NULL
  THEN 'True'
    ELSE 'False'
  END AS 'home_try_on',
  h.number_of_pairs,
 CASE WHEN p.user_id IS NOT NULL
  THEN 'True'
    ELSE 'False'
  END AS 'purchase'
FROM
  quiz q
  LEFT JOIN home_try_on AS h USING (user_id)
  LEFT JOIN purchase AS p USING (user_id)
LIMIT 10;
```

conversions table			
user_id	**home_try_on**	**number_of_pairs**	**purchase**
——	**TRUE**	**3**	**FALSE**
——	**TRUE**	**3**	**TRUE**

Diving Deeper

Calculating Conversion Rates

Warby Parker Purchase Funnel
Take Style Quiz —> Home Try On —> Purchase the Perfect Pair of Glasses

Calculating Conversion Rates

Using our previous query where we calculate the home try on and purchase status for each user, we're able to calculate the conversion rates for each campaign.

Using SUM, we calculate each conversion rate by dividing total purchases by total user_ids within that campaign (results are noted in the table below).

- Of those that took the style quiz, 75% made a purchase.
- Of those that tried on glasses at home, 66% made a purchase.
- Those that tried on 5 pairs of glasses were were more likely to make a purchase than those that tried on 3 pairs.

The overall conversion rate for Warby Parker, based on the data provided, wavers right at 50%.

```
WITH conversions 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
 SUM(is_home_try_on = 1)*1.0/COUNT(*)
   AS 'quiz_conversion_rate',
 SUM(is_purchase = 1)*1.0/
 SUM(is_home_try_on = 1)
   AS 'home_try_on_conversion_rate',
 SUM(is_purchase = 1)*1.0/COUNT(*)
   AS 'overall conversion rate',
 (SUM(is_purchase = 1 AND
   number_of_pairs = '3 pairs')*1.0/
 SUM(is_home_try_on = 1 AND
   number_of_pairs = '3 pairs'))
   AS  '3_conversion_rate',
 (SUM(is_purchase = 1 AND
   number_of_pairs = '5 pairs')*1.0/
 SUM(is_home_try_on = 1 AND
   number_of_pairs = '5 pairs'))
   AS  '5_conversion_rate'
FROM conversions;
```

quiz_conversion_rate	home_try_on_conversion_rate	overall_conversion_rate	3_conversion_rate	5_conversion_rate
75%	**66%**	**49.5%**	**53%**	**79%**

Diving Deeper

Analyzing Quiz & Purchase Data

Style Quiz Results: Most common answers

The query on the right allows us to evaluate what the **most common set of answers** was from the style quiz. From these results, we can see that the Women's Narrow & Rectangular Frames are the most common, desired style.

```
SELECT
style,
fit,
shape,
color,
COUNT (*) AS 'num'
FROM quiz
GROUP BY style, fit, shape, color
ORDER BY num DESC;
```

style	fit	shape	color	num
Men's Styles	Narrow	Rectangular	Tortoise	23
Women's Styles	Narrow	Rectangular	Black	20
Women's Styles	Narrow	Rectangular	Tortoise	20

Style Quiz Results: Most popular answers

The queries on the right allow us to evaluate what the **most popular answers** were from the style quiz. While the spread is fairly even for style, fit, and shape, Warby Parker customers seem to like a variety of colors.

style	num
Women's Styles	**469**
Men's Styles	**432**

fit	num
Narrow	**408**
Medium	**305**

shape	num
Rectangular	**397**
Square	**326**

color	num
Tortoise	**292**
Black	**280**

```
SELECT
style,
COUNT (*) AS 'num'
FROM quiz
GROUP BY style
ORDER BY num DESC;

SELECT
fit,
COUNT (*) AS 'num'
FROM quiz
GROUP BY fit
ORDER BY num DESC;

SELECT
shape,
COUNT (*) AS 'num'
FROM quiz
GROUP BY shape
ORDER BY num DESC;

SELECT
color,
COUNT (*) AS 'num'
FROM quiz
GROUP BY color
ORDER BY num DESC;
```

Purchase Results: Most common purchases

The query on the right allows us to evaluate what the **most common purchases** were. From these results, we can see that the Women's Narrow Frames, in keeping with the style quiz results, seem to be the most common, desired style.

```
SELECT
style,
model_name,
color,
price,
COUNT (*) AS 'num'
FROM purchase
GROUP BY style, model_name, color, price
ORDER BY num DESC;
```

style	model_name	color	price	num
Men's Styles	Dawes	Driftwood Fade	$150	63
Women's Styles	Eugene Narrow	Rosewood Tortoise	$95	62
Women's Styles	Eugene Narrow	Rose Crystal	$95	64

Purchase Results: Most popular purchases

The queries on the right allow us to evaluate what the **most popular purchases** were among this data set. Notably, the price results are a good indication of the range within most Warby Parker customers are willing to pay.

style	num
Women's Styles	**252**
Men's Styles	**243**

model_name	num
Eugene Narrow	**116**
Dawes	**107**

color	num
Jet Black	**86**
Driftwood Fade	**63**

price	num
$95	**261**
$150	**193**

```
SELECT
style,
COUNT (*) AS 'num'
FROM purchase
GROUP BY style
ORDER BY num DESC;

SELECT
model_name,
COUNT (*) AS 'num'
FROM quiz
GROUP BY model_name
ORDER BY num DESC;

SELECT
color,
COUNT (*) AS 'num'
FROM quiz
GROUP BY color
ORDER BY num DESC;

SELECT
price,
COUNT (*) AS 'num'
FROM quiz
GROUP BY price
ORDER BY num DESC;
```

Purchase Results: Takeaways

The query on the right allows us to evaluate what the most **unpopular price point** was, using ASC rather than DESC to sort from lowest to highest number of purchases. Warby Parker only has three price points, and two are clearly performing much better.

```
SELECT
price,
COUNT (*) AS 'num'
FROM purchase
GROUP BY price
ORDER BY num ASC;
```

price	num
$50	41
$95	193
$150	261

Actionable Insights

Final thoughts

1. The $95 price point accounts for more than 50% of Warby Parker's sales. Discontinuing the $50 price point (accounting for only 8% of purchases) and pricing additional pair at or within their sweet spot ($95-$150, 92% of purchases) could be a worthwhile experiment. Performing user research to better understand their customers' spending habits may also be beneficial.

2. Users who try on five pairs of glasses at home are 23% more likely to make a purchase than their counterparts receiving only three pair to try on at home. Moving forward, Warby Parker should consider scaling the five pair approach - keeping a close eye on overall conversion rate (currently 50%) to see if the additional two pair to choose from make a considerable impact on sales.