



Usage Funnels with Warby Parker

Learn SQL from Scratch

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Summary of Recommendations

Tasks 1-5

Task 1 – Select all columns from the first 10 rows.

The table includes the following three columns:

- question – each row contains 1 of 5 survey questions
- user_id – the id of the user who answered the question
- response – the user's response to the associated question

All variables are TEXT data type. The output of the query is displayed on the next page.

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

Task 1 – 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

Task 2 – What is the number of responses for each question?

Query Results:

question	No_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

```
SELECT question,  
       COUNT(DISTINCT user_id) AS 'No_of_responses'  
FROM survey  
GROUP BY 1;
```

Task 3 - Calculate the percentage of users who answer each question.

question	No_of_responses	% answered
1. What are you looking for?	500	100%
2. What's your fit?	475	95%
3. Which shapes do you like?	380	80%
4. Which colors do you like?	361	95%
5. When was your last eye exam?	270	75%

3a. Which question(s) of the quiz have a lower completion rates?

Question 5, asking about eye exams, is the lowest completed question (75%) by a significant margin. The second lowest response rate belongs to question 3 (80%), which asks about the user’s shape preferences.

Task 3 - Calculate the percentage of users who answer each question.

3b. What do you think is the reason?

For question 5, responders may find the question too personal, therefore many refrain from answering.

Another factor may be due to a non-inclusive structure of question 5. It is conceivable that the respondent **never** had an eye exam. This choice is not available therefore those respondents might have chosen to skip the question.

Non-inclusive answer choices may have caused the lower response rate for question 3 also. There is no choice for 'not sure'. This is different from 'no preference' because no preference means they don't care while not sure means they care but haven't made a decision. Thus people who were unsure may have skipped the question as there was no adequate response available. Q2 in comparison, includes a 'not sure' response which makes up about 10% of the response. Thus if Q2 was missing the not sure choice, the % answered result could have been as low as 85%. Incidentally Q4, with a high % answer rate, appears to be inclusive because there are no product colours available outside those listed.

The next page shows the query and output used to observe questions choices and the number of responses for each.

Task 3 - Calculate the percentage of users who answer each question.

```
-- Example query used to observe
-- choice options and frequency of response

SELECT response,
       COUNT(DISTINCT user_id) AS 'No_of_responses'
FROM survey
WHERE question = '3. Which shapes do you like?'
GROUP BY 1;
```

Q2- What's your fit?

response	No_of_responses
I'm not sure. Let's skip it.	47
Medium	132
Narrow	208
Wide	88

Q3 – What shapes do you like?

response	No_of_responses
No Preference	29
Rectangular	141
Round	91
Square	119

Q4 - What colors do you like?

response	No_of_responses
Black	112
Crystal	69
Neutral	36
Tortoise	117
Two-Tone	27

Q5 – When was your last eye exam?

response	No_of_responses
1-3 Years	56
3+ Years	37
<1 Year	141
Not Sure. Let's Skip It	36

Task 4 – Examine the first five rows of each table; What are the column names?

quiz table columns:

- user_id
- style
- fit
- shape
- color

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

home_try_on table columns:

- user_id
- number_of_pairs
- address

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

purchase table columns:

user_id
product_id
style
model_name
color
price

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

Task 4 – Examine the first five rows of each table; What are the column names?

quiz table	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	
home_try_o n table	ce965c4d-7a2b-4db6-9847-601747fa7812	Women's Styles	Wide	Rectangular	Black	
	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			
purchase table	4e71850e-8bbf-4e6b-accb-49a7bb46c586	3 pairs	347 Madison Square N			
	3bc8f97f-2336-4dab-bd86-e391609dab97	5 pairs	182 Cornelia St			
	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

Task 5 – Create new table that joins columns from three tables

Create a new table with the following where:

- 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'.

The output of the code is displayed on the next page.

```
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 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  
LIMIT 10;
```

Task 5 – Create new table that joins columns from three tables

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	NULL	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	NULL	0
0143cb8b-bb81-4916-9750-ce956c9f9bd9	0	NULL	0
a4ccc1b3-cbb6-449c-b7a5-03af42c97433	1	5 pairs	0
b1dded76-cd60-4222-82cb-f6d464104298	1	3 pairs	0

Task 6

Task 6 - Introduction

Task 6 asks to analyze the table in several ways and to offer actionable insights for Warby Parker. This section attempts to address the following:

- calculate overall conversion rates by aggregating across all rows.
- compare conversion from quiz→home_try_on and home_try_on→purchase.
- calculate the difference in purchase rates between customers who had 3 number_of_pairs with ones who had 5.
- Examine most common results of the style quiz.
- Examine common types of purchase made.
- And more

Task six is broken into the following sub-sections 6A to 6H. Each sub-section provides the SQL script used, the results and text organized as follows:

WHAT – Description of the key observations that were found from running the script

SO WHAT – Why the observation is important

NOW WHAT – The actionable insight or recommendation, if any

6A - Aggregating the Results of the Funnels Table

WHAT

- Out of 1000 visitors to the website initially, 750 (75%) had glasses send to them to try at home.
- Out of respondents who had home trials, 495 (or 66%) followed up with a purchase of a pair of glasses.

SO WHAT

- The sales model appears to be working successfully as 2/3s of a significant majority who try glasses at home, end up purchasing a pair.

NOW WHAT

- None

```
WITH funnels 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 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 COUNT(user_id) AS 'Visitors',
    SUM(is_home_try_on) AS 'Tried_at_Home',
    SUM(is_purchase) AS 'Purchased_Glasses'
FROM funnels;
```



6B - A/B Test Results

WHAT

- 53% of people who received 3 pairs to try at home purchased glasses.
- 79% of people who received 5 pairs try at home purchased glasses.

SO WHAT

- Sending more pairs of glasses significantly increases the chance of a sale (an increase of 26%). The practice of sending more pairs per trail therefore should generate more revenue.

NOW WHAT

- Assuming that sending 5 glasses rather than 3 is not cost prohibitive, Warby Parker ought to adopt the 5 pair trails completely and stop sending only 3 pairs to individuals.

Purchased	3 Pairs Sent	5 Pairs Sent
No	178	77
Yes	201	294
Total	379	371



53%
Success



79%
Success

6B - A/B Test Results

SQL Script:

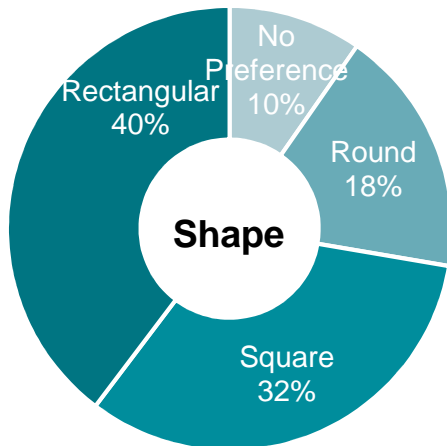
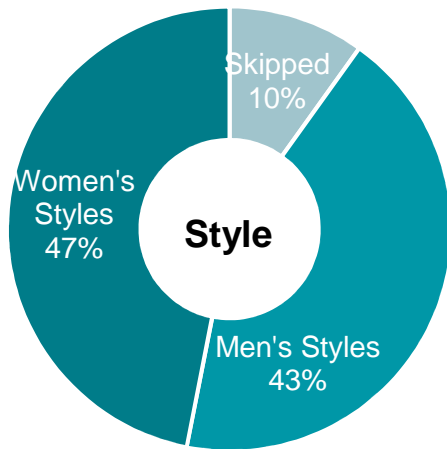
```
-- 6B A/B Test Results
WITH funnels AS (SELECT DISTINCT q.user_id,
    h.user_id IS NOT NULL AS 'is_home_try_on',
    h.number_of_pairs,
    p.user_id IS NOT NULL AS 'is_purchase'
FROM quiz AS 'q'
LEFT JOIN home_try_on AS 'h'
    ON q.user_id = h.user_id
LEFT JOIN purchase AS 'p'
    ON p.user_id = q.user_id
)

SELECT is_purchase,
    COUNT(CASE WHEN number_of_pairs = '3 pairs' THEN
is_home_try_on END) AS '3_pairs_sent',
    COUNT(CASE WHEN number_of_pairs = '5 pairs' THEN
is_home_try_on END) AS '5_pairs_sent'
FROM funnels
GROUP BY 1;
```

Output:

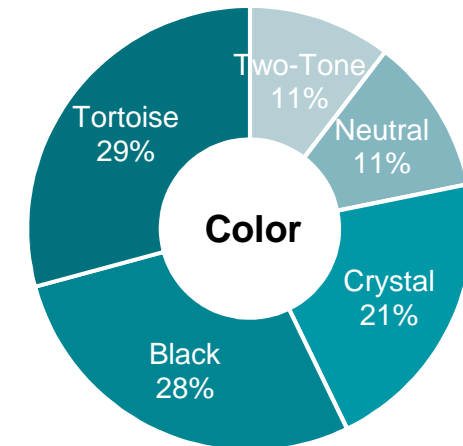
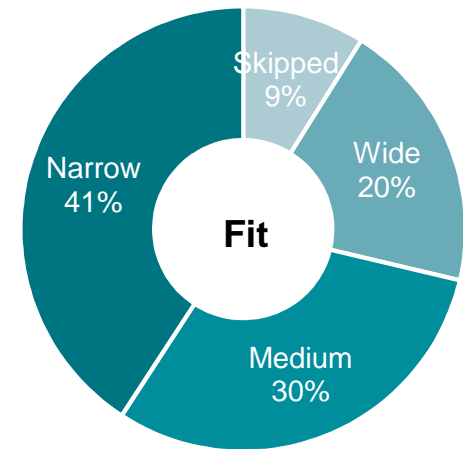
is_purchase	3_pairs	5_pairs
0	178	77
1	201	294

6C - Most Common Results of the Style Quiz



WHAT

- *Style* – There is a fairly even split between Women's Style versus men's styles
- *Fit* – Narrow is the most common fit followed by medium and then wide
- *Shape* - Respondents are much more likely to prefer rectangular shapes and secondarily square shapes.
- *Color* – Tortoise and Black are the most common results, Crystal is somewhat behind with the third most choices.
- *Overall* – Crosstabs were run on the various question combinations however no significant insight was observed from this activity therefore it is not reported here.



6C - Most Common Results of the Style Quiz

SO WHAT

- As we want to minimize shelf life of glasses, It is important to try to match the inventory proportionally to the characteristics of popular demand. For example, currently the cornered shaped glasses are trending over round glasses, thus more rectangular and square glasses should be stocked in comparison to rounded ones.

NOW WHAT

- Ensure higher stock of Narrow and Medium fit glasses, Rectangular and Square fit glasses and Tortoise and Black colored glasses.
- Ensure lower stock of Wide fit glasses, round shaped glasses and two-tone and neutral colors.

```
-- 6C Most Common Results of the style Quiz
SELECT style, COUNT(*) AS 'Frequency'
FROM quiz
GROUP BY 1
ORDER BY 2;

SELECT fit, COUNT(*) AS 'Frequency'
FROM quiz
GROUP BY 1
ORDER BY 2;
```

```
-- 6C Most Common Results of the style Quiz
SELECT shape, COUNT(*) AS 'Frequency'
FROM quiz
GROUP BY 1
ORDER BY 2;

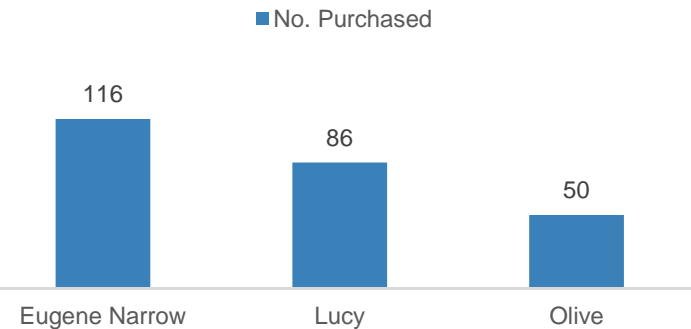
SELECT color, COUNT(*) AS 'Frequency'
FROM quiz
GROUP BY 1
ORDER BY 2;
```

6D – Purchased Women’s Style Glasses Profile

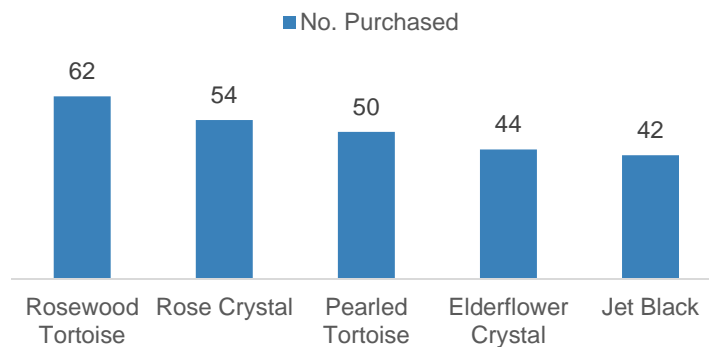
WHAT

- The Eugene Narrow model was sold more than any other model
- Rosewood Tortoise color is the most popular colour.
- Jet Black colored glasses have sold the least in women’s styles even though it was one of the most popular colours in the pre-trial quiz
- Majority of buyers for women’s style glasses pay the lower value of \$95

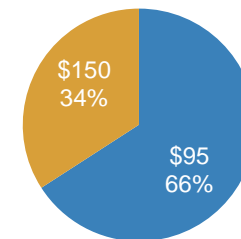
Model Name Purchases



Color Choice of Purchases



Price Paid



6D – Purchased Women’s Style Glasses Profile

SO WHAT

- While black is one of the most popular colours overall, it is not as popular in Women’s styles; tortoise and Crystal are preferred.

NOW WHAT

- Temper the earlier recommendation by ensuring lower stock of black glasses in women’s styles specifically in inventory and lower stock of Olive models, to minimize inventory costs.

```
--Frequency of models purchased in  
--Women's styles  
SELECT model_name, COUNT(*) AS 'No.  
Purchased'  
FROM purchase  
WHERE style Like 'W%'  
GROUP BY 1  
ORDER BY 2 DESC;
```

```
--Frequency of colors purchased in  
--Women's styles  
SELECT color, COUNT(*) AS 'No.  
Purchased'  
FROM purchase  
WHERE style Like 'W%'  
GROUP BY 1  
ORDER BY 2 DESC;
```

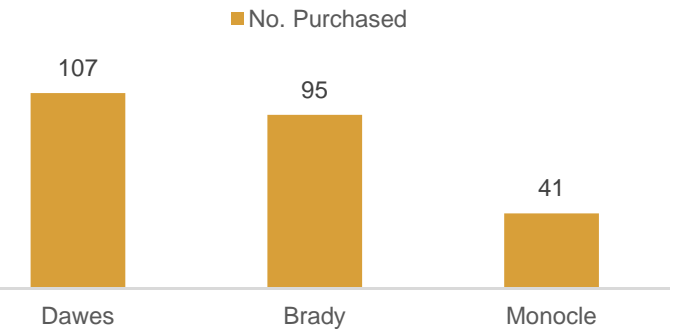
```
--Frequency of price purchased at  
--in Women's styles  
SELECT price, COUNT(*) AS 'No.  
Purchased'  
FROM purchase  
WHERE style Like 'W%'  
GROUP BY 1  
ORDER BY 2 DESC;
```

6E – Purchased Men's Style Glasses Profile

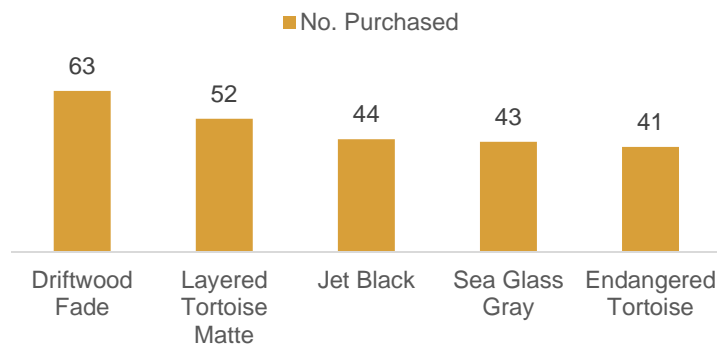
WHAT

- The Monocle model is the least popular
- Driftwood Fade is the most popular colour
- Low end (\$50) prices glasses are sold the least

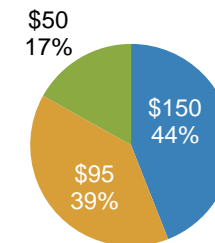
Model Name Purchases



Color Choice of Purchases



Price Paid



6E – Purchased Men’s Style Glasses Profile

SO WHAT

- A low number of low priced glasses are being sold. Conversely a lot of men’s style glasses are being sold at the high end, thus there appears to be some willingness among consumers to pay higher end prices. It could be possible to boost revenues by eliminating the \$50 purchase option.

NOW WHAT

- Investigate and implement strategies to either discontinue glasses at the \$50 price level or raise prices of \$50 prices.

```
--Frequency of models purchased in  
--Men's styles  
SELECT model_name, COUNT(*) AS 'No.  
Purchased'  
FROM purchase  
WHERE style Like 'M%'  
GROUP BY 1  
ORDER BY 2 DESC;
```

```
--Frequency of colors purchased in  
--Men's styles  
SELECT color, COUNT(*) AS 'No.  
Purchased'  
FROM purchase  
WHERE style Like 'M%'  
GROUP BY 1  
ORDER BY 2 DESC;
```

```
--Frequency of price purchased at  
--in Men's styles  
SELECT price, COUNT(*) AS 'No.  
Purchased'  
FROM purchase  
WHERE style Like 'M%'  
GROUP BY 1  
ORDER BY 2 DESC;
```


6F – Average Sale Prices

WHAT

- Average sale price is slightly higher, but not significantly, for Women's style glasses.

SO WHAT

- While there are lower end glasses sold for men's style this is offset by higher end sales. Thus, as reported in the previous slide, there is opportunity to increase revenues for men's style and boost average sale price.

NOW WHAT

- Investigate and implement strategies to either discontinue glasses at the \$50 price level or raise prices of \$50 prices.

```
--6F
--Average price of purchases by style
SELECT style,
       ROUND(AVG(price), 2) AS "Average sale
price"
FROM purchase
GROUP BY 1;

--Overall Average price of purchases
SELECT ROUND(AVG(price), 2) AS "Overall
Average Sale Price"
FROM purchase;
```

style	Average sale price
Men's Styles	111.63
Women's Styles	113.77
Overall Average Sale Price:	
112.72	

Summary of Recommendations

- Assuming that the cost of sending 5 glasses rather than 3 is not prohibitive, Warby Parker ought to adopt the 5 pair trails and stop sending only 3 pairs to individuals
- Inventory recommendations:
 - Overall - Higher stock of Narrow and Medium fit glasses, Rectangular and Square fit glasses
 - Overall - Higher stock of Tortoise colored glasses
 - Overall - Lower stock of Wide fit glasses, round shaped glasses and two-tone and neutral colors
 - Women's Styles only - Lower stock of black colored glasses and the Olive model
- Investigate and implement strategies to either discontinue men's style glasses at the \$50 price level or raise prices of \$50 prices.