codecademy

Funnels with Warby Parker

Learn SQL from Scratch

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1. Get familiar with

WARBY PARKER

1.1 What is 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.

- To find out more, visit: https://www.warbyparker.com/

2. Introduction to Capstone Project

1.2 Introduction to Capstone Project

In this Capstone Project, I have analysed different Warby Parker's marketing funnels in order to calculate conversion rates. **Here are the funnels and the tables that were given:**

Quiz Funnel – stored in following tables:

- **Survey**

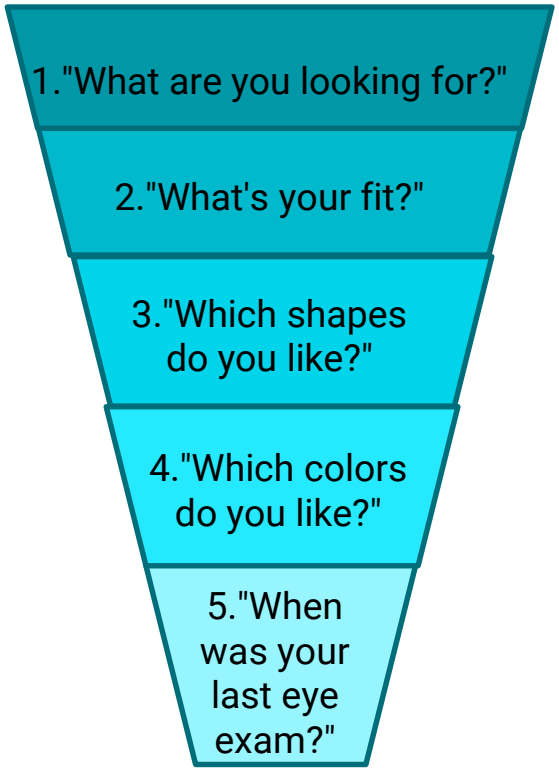
Home Try-On Funnel – stores in following tables:

- **quiz**
- **home_try_on**
- **Purchase**

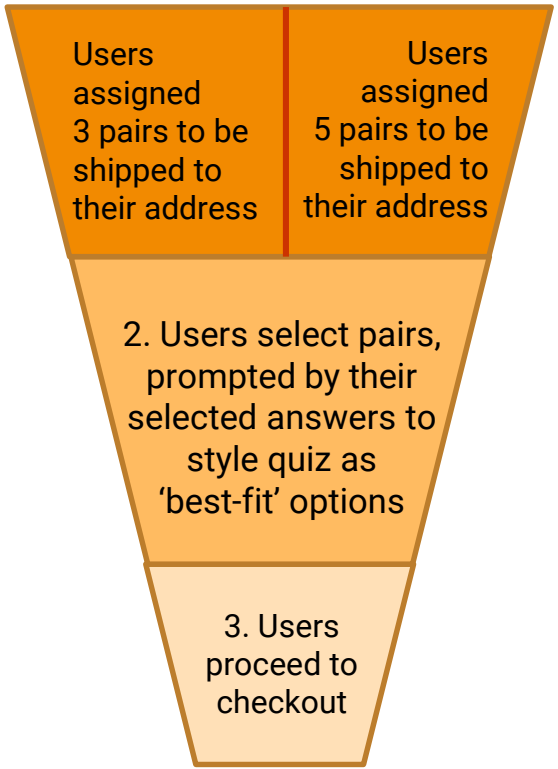
This project was a collaboration with Warby Parker’s Data Science team (thank you!) and uses fictional data.

1.2 Introduction to Capstone Project

QUIZ FUNNEL



HOME TRY-ON FUNNEL



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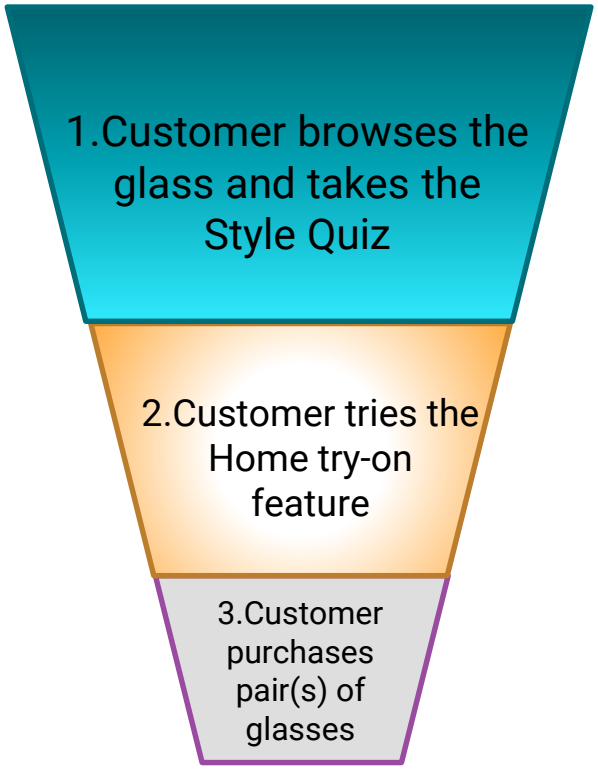
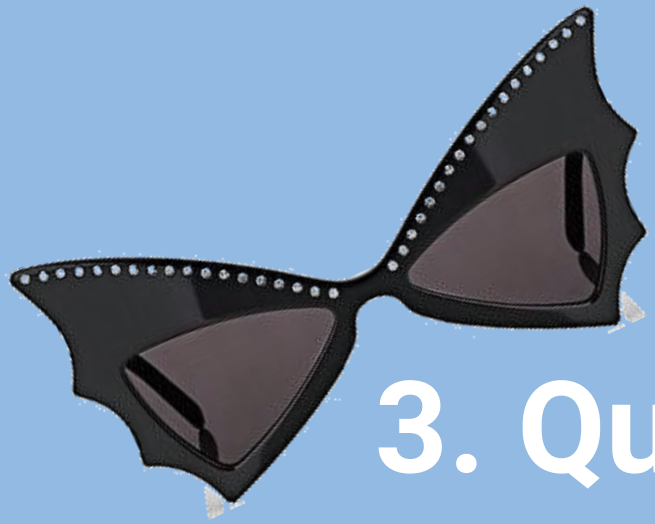




3. Quiz Funnel Analysis

3.1 Quiz Funnel Analysis, Part One

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.**

The ‘survey’ table has the following columns:

```
-- Query for Quiz Funnel Part One: All columns of the 'survey'
table, obtained from users taking the "Style Quiz“

SELECT *
FROM survey
LIMIT 10;
```

Quiz Funnel Analysis results stored in Table ‘survey’

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

3.2 Quiz Funnel Analysis, Part 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.
- The number of responses for each question is shown on the table to the left:

```
-- Query for Quiz Funnel Part Two:  Breakdown of number of users per
each 'question' taking the "Style Quiz" from the 'survey table'.

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

Number of responses for each question from Quiz Funnel Analysis

question	COUNT(DISTINCT user_id)
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

3.3 Quiz Funnel Analysis, Part 3

Using SQL, the following table presents the calculations of percentages of users who answer each question.

As can be seen, Questions 5 and 3 have the lowest completion rates.

Q5 has the lowest completion rates, probably because the user could not remember when they had their last eye exam. Q3 has the second lowest completion rate as people may still be thinking about Q2 i.e. the 'fit' and may not be completely sure of continuing forward with the survey and choosing 'shapes' based off their selection. It also might be tough for some to know the shape they like or that is most compatible with their facial structure.

Comparison of number of responses for each question to previous question from Quiz Funnel Analysis

q2_q1	q3_q2	q4_q3	q5_q4
95.0	80.0	95.0	74.79

```
-- Query for Quiz Funnel Part Three: Breakdown of
the skipping rates for each question, as compared
to previous question in 'survey' table, by users
taking the "Style Quiz"

SELECT  ROUND((100.0*q2/q1),2) AS q2_q1,
ROUND((100.0*q3/q2),2) AS q3_q2,
ROUND((100.0*q4/q3),2) AS q4_q3,
ROUND((100.0*q5/q4),2) AS q5_q4 FROM (SELECT * FROM
(SELECT COUNT(user_id) AS 'q1' FROM survey WHERE
question LIKE '1.%')
CROSS JOIN (SELECT COUNT(user_id) AS 'q2' FROM
survey WHERE question LIKE '2.%')
CROSS JOIN (SELECT COUNT(user_id) AS 'q3' FROM
survey WHERE question LIKE '3.%')
CROSS JOIN (SELECT COUNT(user_id) AS 'q4' FROM
survey WHERE question LIKE '4.%')
CROSS JOIN (SELECT COUNT(user_id) AS 'q5' FROM
survey WHERE question LIKE '5.%'));
```

4. Home Try-On Funnel Analysis

4.1 Home Try-On Funnel Analysis, Part Four

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

```
-- Query for Home Try-On Funnel Part 4: All coloumns of the
'quiz', 'home_try_on' and 'purchase' tables, obtained from
users trying the "Home Try-On" Feature and "Style Quiz"

SELECT *
FROM quiz
LIMIT 5;

SELECT *
FROM home_try_on
LIMIT 5;

SELECT *
FROM purchase
LIMIT 5;
```

4.1 Home Try-On Funnel Analysis, Part Four – ‘quiz’ Table

PART I Home Try-On Funnel Analysis A/B testing results stored in Table ‘quiz’ –
(based on the user selections from Style Quiz survey)

user_id	style	fit	shape
4e8118dc-bb3d-49bf-85fc-cca8d83232ac	Women's Styles	Medium	Rectangular
291f1cca-e507-48be-b063-002b14906468	Women's Styles	Narrow	Round
75122300-0736-4087-b6d8-c0c5373a1a04	Women's Styles	Wide	Rectangular
75bc6ebd-40cd-4e1d-a301-27ddd93b12e2	Women's Styles	Narrow	Square

4.1 Home Try-On Funnel Analysis, Part Four – 'home_try_on' Table

PART II Home Try-On Funnel Analysis A/B testing results stored in Table 'home_try_on' –
(based on how many pairs were assigned and shipped to each user.)

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

4.1 Home Try-On Funnel Analysis, Part Four – ‘purchase’ Table

PART III Home Try-On Funnel Analysis results stored in Table ‘purchase’ –
(based off the number of users who try the ‘Style Quiz’ and ‘Home Try-On’ that finally purchase the pairs of glass.)

user_id	style	fit	shape
4e8118dc-bb3d-49bf-85fc-cca8d83232ac	Women's Styles	Medium	Rectangular
291f1cca-e507-48be-b063-002b14906468	Women's Styles	Narrow	Round
75122300-0736-4087-b6d8-c0c5373a1a04	Women's Styles	Wide	Rectangular
75bc6ebd-40cd-4e1d-a301-27ddd93b12e2	Women's Styles	Narrow	Square

4.2 Home Try-On Funnel Analysis, Part Five

Created a new table with the following layout:
Each row represents 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' (1), otherwise False (0)
- number_of_pairs comes from **home_try_on table** (3 or 5)
- If the user has any entries in **is_purchase,** then is_purchase will be 'True'. (1), otherwise False (0).

Used 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). Selected only the first 10 rows from this table.

```
-- Home Try-On Funnel Part 5: Creating a LEFT JOIN of 'quiz', 'home_try_on', and 'purchase' Tables.

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;
```

Home Try-On Funnel Analysis –
LEFT JOIN of 'quiz', 'home_try_on', and 'purchase' 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

4.3 Home Try-On Funnel Analysis, Part Six

```
-- Home Try-On Funnel Part 6: Calculating Aggregates and Comparisons from the LEFT JOIN of ‘quiz’, ‘home_try_on’, and
‘purchase’ Tables.

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 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 number_of_pairs, COUNT(*) AS 'num_quiz',
   SUM(is_home_try_on) AS 'num_home_try_on',
   SUM(is_purchase) AS 'num_purchase',
  ROUND (100.0 * SUM(is_home_try_on) / (COUNT (user_id)),2) AS 'quiz_to_home_try_on',
   ROUND(100.0 * SUM(is_purchase) / SUM(is_home_try_on),2) AS 'home_try_on_to_purchase'
FROM funnels
GROUP BY number_of_pairs
ORDER BY number_of_pairs;
```

4.3 Home Try-On Funnel Analysis, Part Six

The following table has been produced to calculate the sum total of the people who take the Style Quiz, then out of those the number of people who try the Home Try-On feature for each of 3 pairs, and 5 pair options and then out of those, the number of users who finally purchase the product.

Home Try-On Funnel (HTO) Analysis – AGGREGATES AND COMPARIONS from the LEFT JOIN of 'quiz', 'home_try_on', and 'purchase' Tables.

number_of_pairs	num_quiz	num_home_try_on	num_purchase	quiz_to_home_try_on	home_try_on_to_purchase
Didn't try HTO	250	0	0	0.0	Didn't go for HTO
3 pairs	379	379	201	100.0	53.03
5 pairs	371	371	294	100.0	79.25

4.3 Home Try-On Funnel Analysis, Part Six – ‘quiz’ table

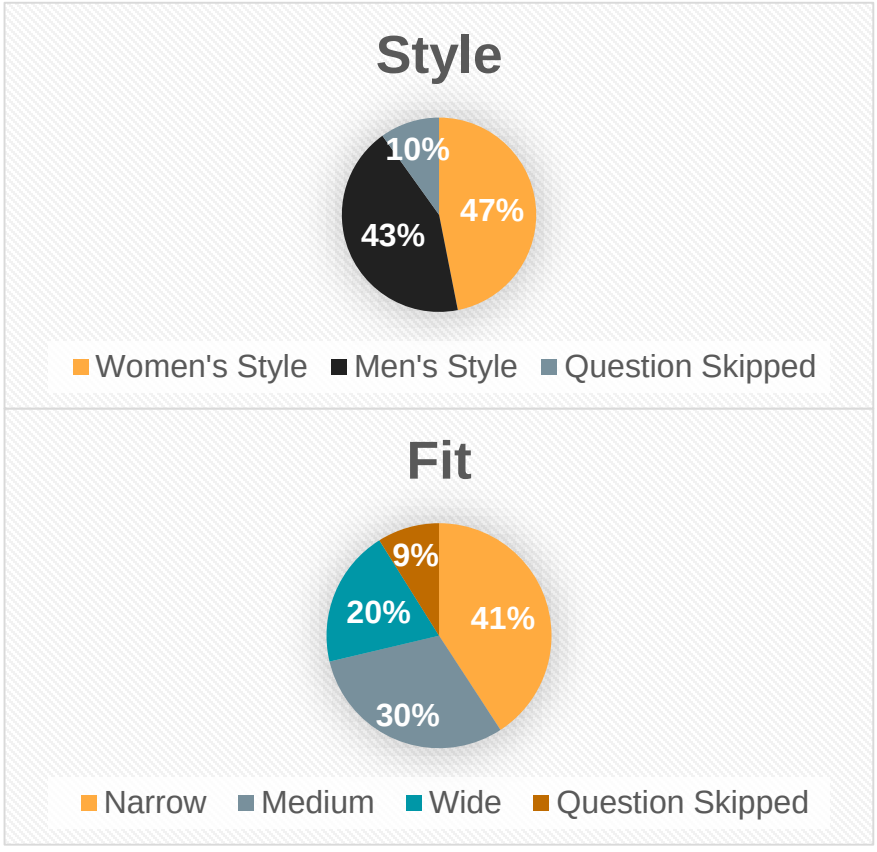
The following table has been produced to showcase the top selections for each of ‘style’, ‘fit’, ‘shape’ and ‘color’ selected by users taking the quiz survey. Data analysed from the ‘quiz’ table.

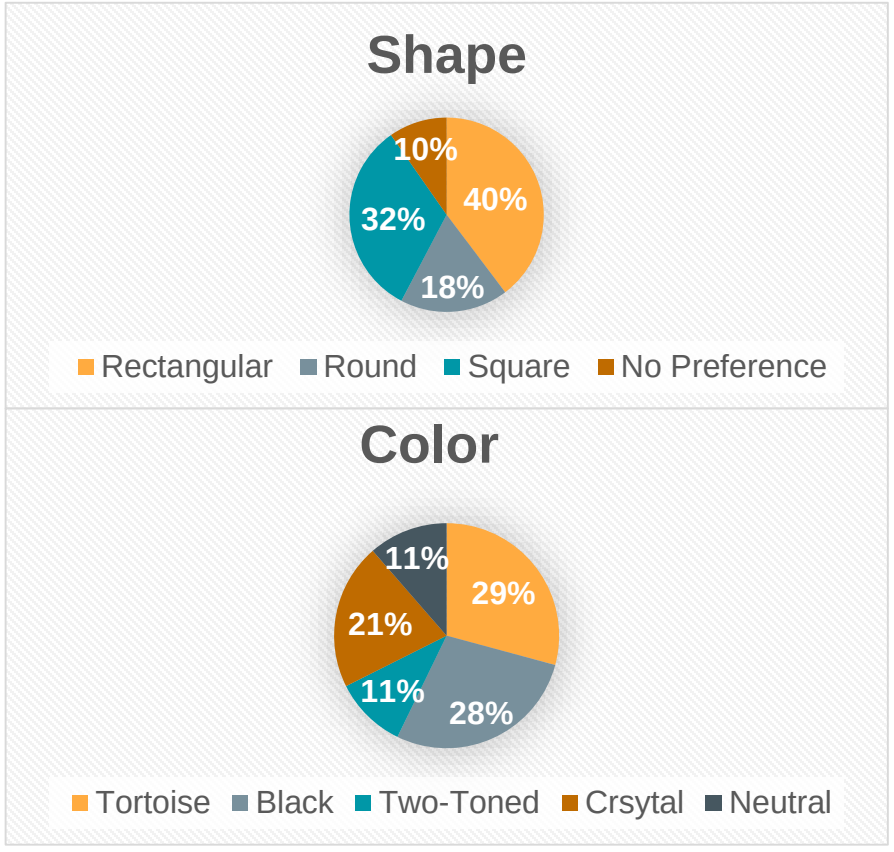
```
-- Home Try-On Funnel Part 6 B
SELECT COUNT (style)
FROM quiz
WHERE style LIKE 'Women%';

SELECT COUNT (style)
FROM quiz
WHERE style LIKE 'Men%';

SELECT COUNT (style)
FROM quiz
WHERE style LIKE 'I%';

SELECT COUNT(fit) FROM quiz
WHERE fit LIKE 'N%';

SELECT COUNT(fit) FROM quiz
WHERE fit LIKE 'M%';

SELECT COUNT(fit) FROM quiz
WHERE fit LIKE 'W%';

SELECT COUNT(fit) FROM quiz
WHERE fit LIKE 'I%';

SELECT COUNT (shape)
FROM quiz
WHERE shape LIKE 'Re%';

SELECT COUNT (shape)
FROM quiz
WHERE shape LIKE 'Ro%';
```

```
-- Home Try-On Funnel Part 6 B
SELECT COUNT (shape)
FROM quiz
WHERE shape LIKE 'S%';

SELECT COUNT (shape)
FROM quiz
WHERE shape LIKE 'N%';

SELECT COUNT (color)
FROM quiz
WHERE style LIKE 'To%';

SELECT COUNT (color)
FROM quiz
WHERE color LIKE 'B%';

SELECT COUNT (color)
FROM quiz
WHERE color LIKE 'Tw%';

SELECT COUNT (color)
FROM quiz
WHERE color LIKE 'C%';

SELECT COUNT (color)
FROM quiz
WHERE  color LIKE 'N%';
```

Style	Fit	Shape	Color
Women’s Style = 469	Narrow = 408	Rectangular = 397	Tortoise = 292
Men’s Style = 432	Medium = 305	Round = 180	Black = 280
Question skipped = 99	Wide = 198	Square = 326	Two-Toned = 104
	Question skipped = 89	No preference = 97	Crystal = 210
			Neutral = 114
Total:1000			

4.3 Home Try-On Funnel Analysis, Part Six





4.3 Home Try-On Funnel Analysis, Part Six – 'purchase' table

The following table has been produced to showcase the top selections for each of 'style', 'model_name', 'price', 'product_id' and 'color' selected by users purchasing the final product. Data analysed from the 'purchase' table.

```
-- Home Try-On Funnel Part 6 C

SELECT COUNT (product_id) FROM purchase
WHERE product_id = 1;

SELECT COUNT (product_id) FROM purchase
WHERE product_id = 2;

SELECT COUNT (product_id)FROM purchase
WHERE product_id = 3;

SELECT COUNT (product_id)FROM purchase
WHERE product_id = 4;

SELECT COUNT (product_id)FROM purchase
WHERE product_id = 5;

SELECT COUNT (product_id)FROM purchase
WHERE product_id = 6;

SELECT COUNT (product_id)FROM purchase
WHERE product_id = 7;

SELECT COUNT (product_id)FROM purchase
WHERE product_id = 8;

SELECT COUNT (product_id)FROM purchase
WHERE product_id = 9;

SELECT COUNT (product_id)FROM purchase
WHERE product_id = 10;
```

```
-- Home Try-On Funnel Part 6 C

SELECT COUNT (style) FROM
purchase
WHERE style LIKE 'Women%';

SELECT COUNT (style) FROM
purchase
WHERE style LIKE 'Men%';

SELECT COUNT (model_name)
FROM purchase
WHERE model_name LIKE 'L%';

SELECT COUNT (model_name)
FROM purchase
WHERE model_name LIKE 'D%';

SELECT COUNT (model_name)
FROM purchase
WHERE model_name LIKE 'E%';

SELECT COUNT (model_name)
FROM purchase
WHERE model_name LIKE 'B%';

SELECT COUNT (model_name)
FROM purchase
WHERE model_name LIKE 'M%';

SELECT COUNT (model_name)
FROM purchase
WHERE model_name LIKE 'O%';
```

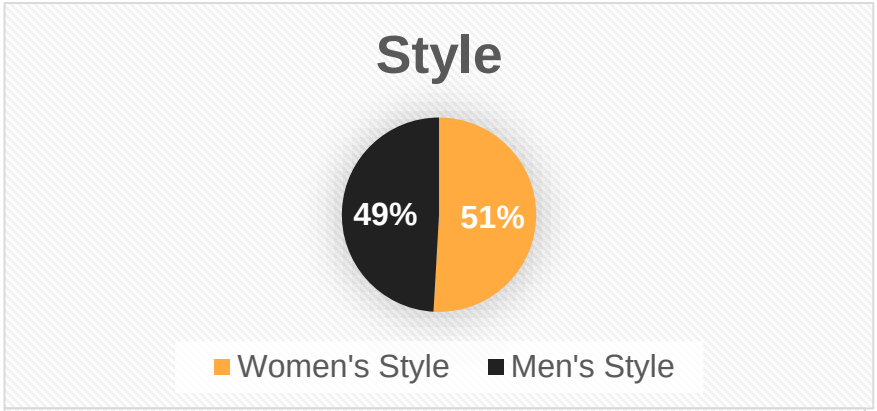
```
-- Home Try-On Funnel Part 6 C

SELECT COUNT (color) FROM purchase
WHERE color LIKE 'J%';

SELECT COUNT (color) FROM purchase
WHERE color LIKE 'Elde%';

SELECT COUNT (color) FROM purchase
WHERE color LIKE 'Rosew%';

SELECT COUNT (color) FROM purchase
WHERE color LIKE 'D%';

SELECT COUNT (color) FROM purchase
WHERE color LIKE 'S%';

SELECT COUNT (color) FROM purchase
WHERE color LIKE 'Enda%';

SELECT COUNT (color) FROM purchase
WHERE color LIKE 'L%';

SELECT COUNT (color) FROM purchase
WHERE color LIKE 'Rose C%';

SELECT COUNT (color) FROM purchase
WHERE color LIKE 'P%';
```

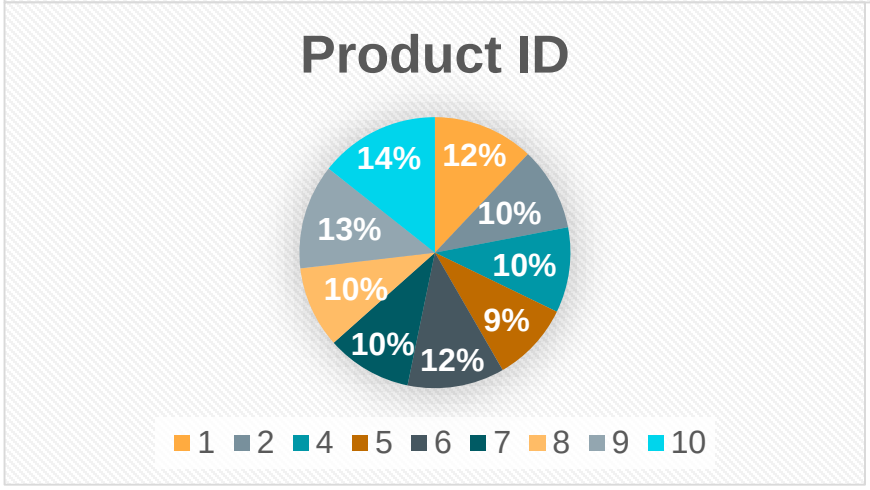
```
-- Query for Part Six C
SELECT COUNT (price)
FROM purchase
WHERE price = 150;

SELECT COUNT (price)
FROM purchase
WHERE price = 95;

SELECT COUNT (price)
FROM purchase
WHERE price = 50;
```

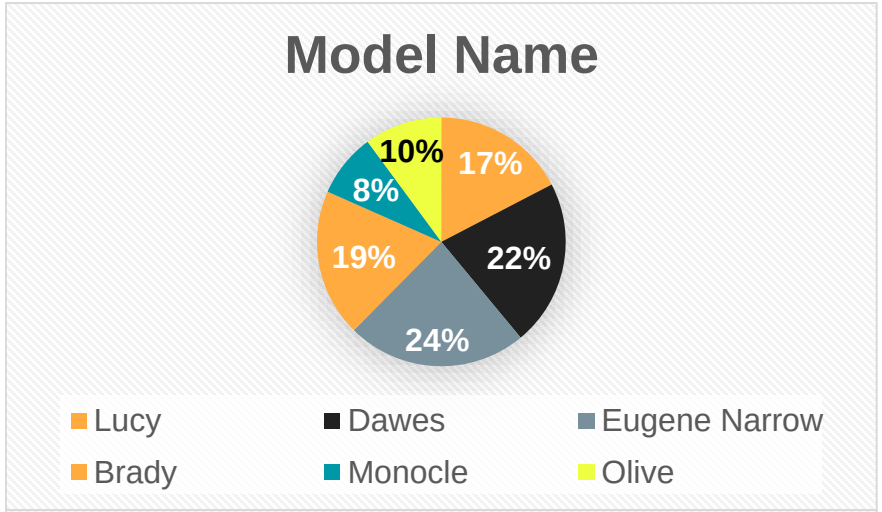
4.3 Home Try-On Funnel Analysis, Part Six – ‘purchase’ table

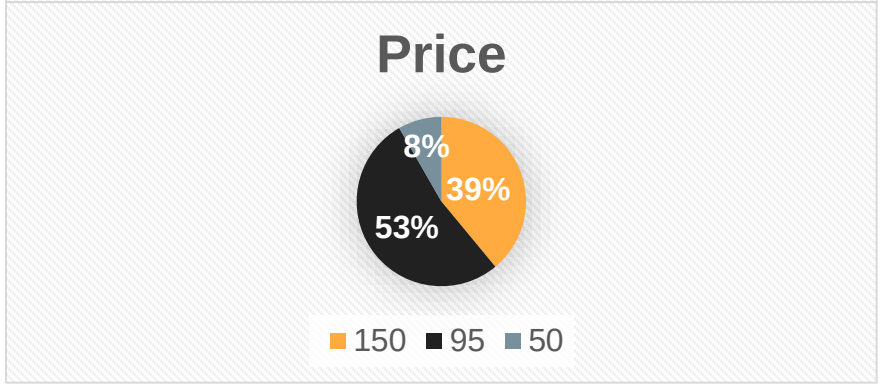
Product ID	Style	Model Name	Color	Price
‘1’ = 52	Women’s Style = 252	Lucy = 86	Jet Black = 86	‘150’ = 193
‘2’ = 43	Men’s Style = 243	Dawes = 107	Elderflower Crystal = 44	’95’ = 261
‘3’ = 63		Eugene Narrow = 116	Rosewood Tortoise = 62	’50’ = 41
‘4’ = 44		Brady = 95	Driftwood Fade = 63	
‘5’ = 41		Monocle = 41	Sea Glass Gray= 43	
‘6’ = 50		Olive = 50	Endangered Tortoise Matte = 41	
‘7’ = 44			Layered Tortoise Matte = 52	
‘8’ = 42			Rose Crystal =54	
‘9’ = 54			Pearled Tortoise = 50	
’10’ = 62				
TOTAL: 495				

4.3 Home Try-On Funnel Analysis, Part Six - – ‘purchase’ table

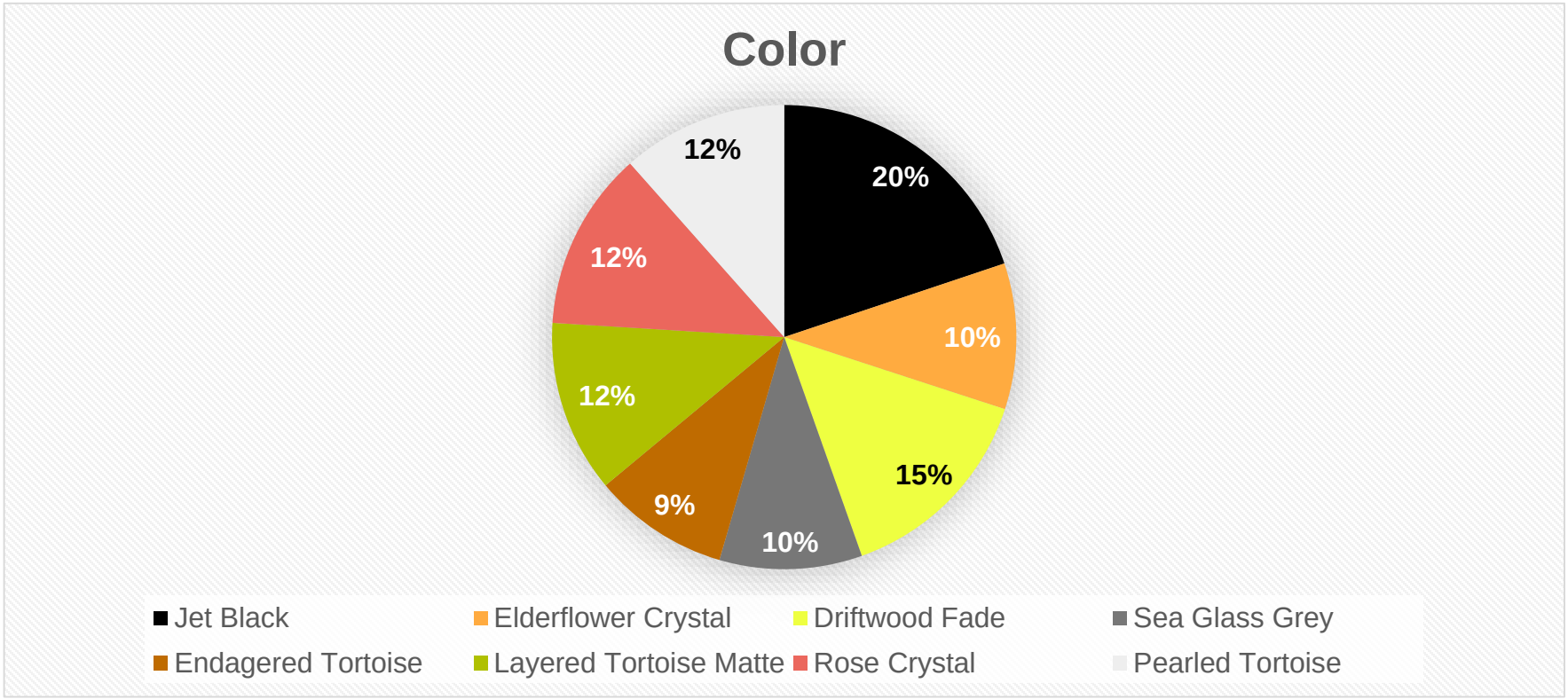








4.3 Home Try-On Funnel Analysis, Part Six – ‘purchase’ table



4.3 Home Try-On Funnel Analysis, Part Six

Recommendations and actionable insights for Warby Parker:

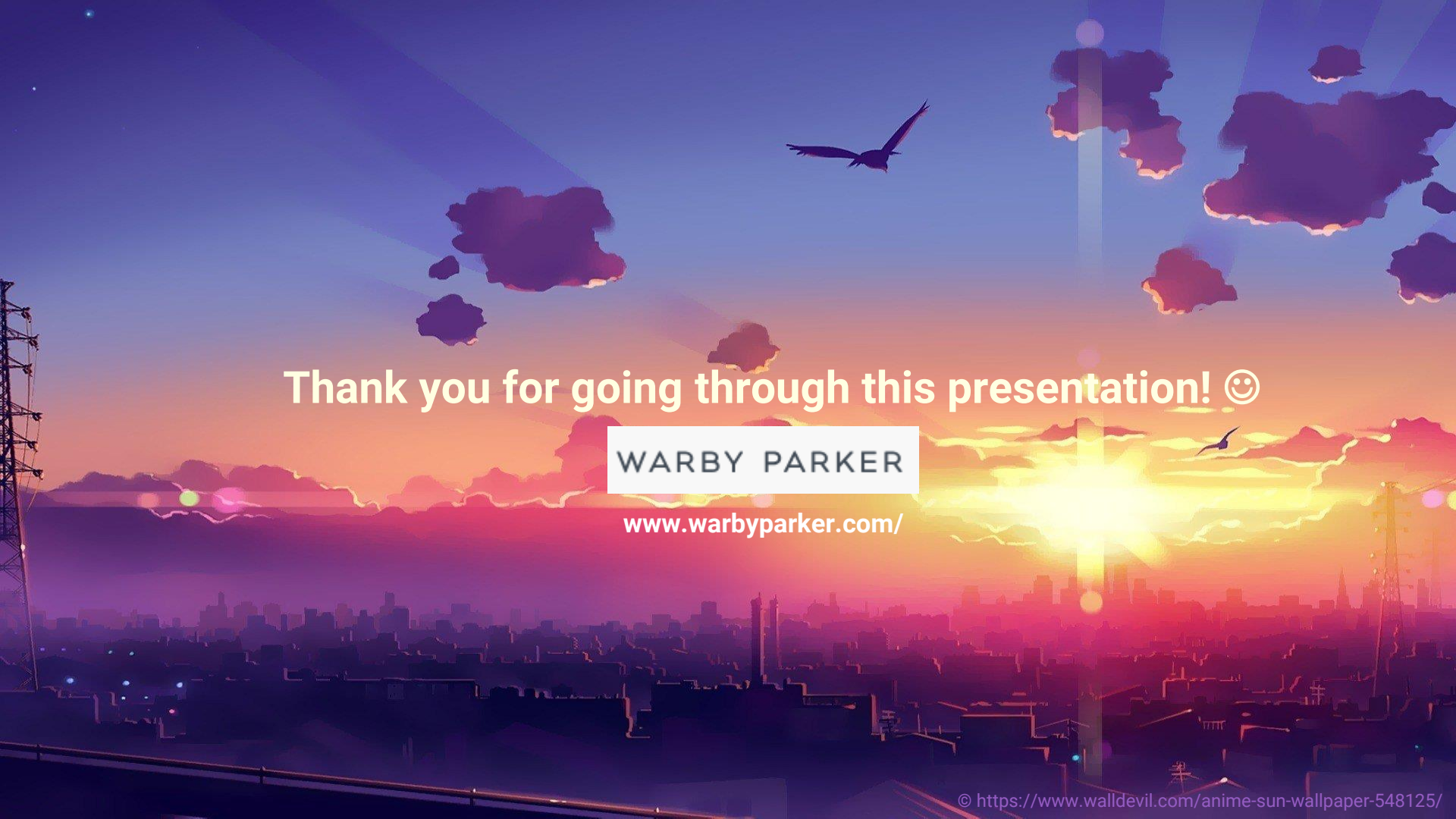
Based on the results obtained from aggregating across all rows of the LEFT JOIN table of 'quiz', 'home_try_on', and 'purchase', it is seen that 1000 users took the Style Quiz, out of these 250 did not go for the Home Try-On feature. Out of the 750 that did, 379 were assigned the '3 pairs' option, 371 were assigned '5 pairs' option. 79% of the users who got to try 5 pairs went for the final purchase, whereas only 53% of the users who got to try 3 pairs did -> ***users who tried 5 pairs were nearly 1.5 times more likely to buy the glass than users who tried 3 pairs.***

-> It is recommend that Warby Parker utilize this to their benefit and send 5 pairs of glasses to more users, as 75% of the users who try the quiz use the home try-on feature.

From the data in the quiz table, out of 1000 users, **47% prefer Women's Style, 43% prefer Men's Style, and 10% skipped the question. Rectangular shape, narrow fit and tortoise color are the top preferences (40%, 41%, and 29%, respectively).**

From the data in the purchase table, out of 495 users, 51% prefer Women's Style, and 41% prefer Men's Style. Eugene Narrow model, product ID 10, and Jet Black color are the top preferences (24%, 14%, and 20% respectively). Most users (53%) purchase the models valued at the median price $95. Only 8% go for for the $50 options.

-> It is recommended that Warby Parker focus on expanding their product range in the narrow type fit, rectangular/square shapes, and tortoise colors (specifically black) and boost production of the $95 - $150 range, as most users seem to be willing to spend the extra amount for the higher quality/ value -added items.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