



Capstone Project: Usage Funnels with Warby Parker

Learn SQL from Scratch

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Agenda

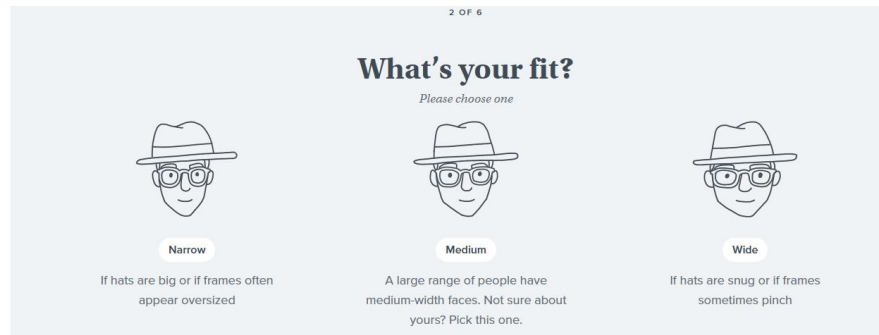
1. Overview
2. The Style Quiz
3. Try at Home
4. Purchase Behavior
5. Recommendations

1. Overview: Warby Parker Project

Warby Parker is a 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 the following slides, we will review the consideration funnel, an A/B test for the brand's Try At Home program and drill into purchase data to assess what is working and opportunities for Warby Parker.

WARBY PARKER



1. Overview: Data Table Layouts

Survey Table		
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.

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
ce965c4d-7a2b-4db6-9847-601747fa7812	Women's Styles	Wide	Rectangular	Black

Home Try On Table		
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-acc4-49a7bb46c586	3 pairs	347 Madison Square N
3bc8f97f-2336-4dab-bd86-e391609dab97	5 pairs	182 Cornelia St

Purchase Table					
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

Leveraging the data in the four available Warby Parker tables (left), we can come arrive at some learnings at where the company is having success and where opportunities may lie.

All of the tables include a column called "user_id." This enables us to set user_id as the primary key to join to this same column name as the foreign key in other tables to observe a customer's behavior throughout his/her interactions with Warby Parker

```
1  SELECT *
2  FROM survey
3  LIMIT 5;
4
5  SELECT *
6  FROM quiz
7  LIMIT 5;
8
9  SELECT *
10 FROM home_try_on
11 LIMIT 5;
12
13 SELECT *
14 FROM purchase
15 LIMIT 5;
```

2. The Style Quiz: Data and Learnings

Warby Parker uses a short “style quiz” to help determine sample frames customers can try at home free for five days.

Looking at the responses captured in a simple table called “survey,” we can quickly see that questions 3 and 5 are answered least often. Why might that be?

FINDINGS:

- Q3: While eyeglass frames are exceptionally personal, plenty of people may not have a good idea what frame shape best fits their face.
- Q5: Remembering birthdays or where you left your coffee mug are hard enough, but the last time you had an eye exam?
- Not terribly surprising that Q5 had the lowest answer rate. Potential embarrassment over how long it had been since one’s last exam may also have depressed response.

```
1  --> how many customers answer each q. in survey
2  SELECT question, COUNT(user_id)
3  FROM survey
4  GROUP BY question;
```

Survey Table		
question	COUNT(user_id)	% completed*
1. What are you looking for?	500	100%
2. What's your fit?	475	95.0%
3. Which shapes do you like?	380	80.0%
4. Which colors do you like?	361	95.0%
5. When was your last eye exam?	270	74.8%

* Percentage based on n customers who answered previous question

2. The Style Quiz: Data and Learnings

Looking closer at the responses to three of the Style Quiz questions, we get a little more insight into the Warby Parker customer.

style	count style
Women's Styles	469
Men's Styles	432
I'm not sure. Let's skip it.	99
fit	count fit
Narrow	408
Medium	305
Wide	198
I'm not sure. Let's skip it.	89
color	count color
Tortoise	292
Black	280
Crystal	210
Neutral	114
Two-Tone	104

FINDINGS:

- Assuming customers are shopping for glasses for themselves, Warby Parker seems to appeal to men and women roughly equally
- If wide fit frames were a hit in the '70s, Warby Parker customer prefer a sleeker look today
- The tortoise shell color is an evergreen classic, but two-tone frames look more likely to stay on the shelves

```
1  --> Quiz table data
2
3  SELECT style, COUNT (user_id) AS 'count style'
4  FROM quiz
5  GROUP BY 1
6  ORDER BY 2 DESC;
7
8  SELECT fit, COUNT (user_id) AS 'count fit'
9  FROM quiz
10 GROUP BY 1
11 ORDER BY 2 DESC;
12
13 SELECT color, COUNT (user_id) AS 'count color'
14 FROM quiz
15 GROUP BY 1
16 ORDER BY 2 DESC;
17
```

3. Try at Home: Conversion

Once a customer takes the Style Quiz, Warby Parker offers to send sample frames for a five-day trial period. Shipping is free both ways for the customer so it truly is no-risk.

We can see how many quiz takers received frames to try on at home and of those, how many later made a purchase.

Took Quiz	tried_on	Quiz conversion	purchased	Purchase conversion
1000	750	75%	495	66%

FINDINGS:

- Fully three-quarters (75%) of quiz-taking customers also opted to test drive some frames at home
- A solid two-thirds (66%) of those who received sample frames later made a purchase

```
1  --> Try-At_Home conversion
2
3  SELECT DISTINCT COUNT (user_id) AS 'took_quiz'
4  FROM quiz;
5
6  WITH browse AS (
7    SELECT DISTINCT q.user_id,
8      h.user_id IS NOT NULL AS 'is_home_try_on',
9      h.number_of_pairs,
10     p.user_id IS NOT NULL AS 'is_purchase'
11  FROM quiz q
12  LEFT JOIN home_try_on h
13    ON q.user_id = h.user_id
14  LEFT JOIN purchase p
15    ON p.user_id = q.user_id)
16
17  SELECT
18    COUNT (CASE WHEN is_home_try_on = 1
19      THEN user_id
20      ELSE NULL
21    END)
22    AS 'tried_on',
23    COUNT (CASE WHEN is_purchase = 1
24      THEN user_id
25      ELSE NULL
26    END)
27    AS 'purchased'
28  FROM browse;
```

3. Try at Home: Test Results

Seeing the strong results of the Try-At-Home program, Warby Parker wanted to see if they could improve the purchase conversion once a customer had agreed to receive samples.

Using a simple 50-50 A/B split for customers who requested sample frames, half received three pairs and half five pairs.

Conversion Rate by # Sample Pairs of Glasses Tried in Home			
3_pairs	5_pairs	bought	Conversion Rate
379	N/A	201	53.0%
N/A	371	294	79.2%

FINDINGS:

Variety is the spice of life for Warby Parker customers!

- Customers who received 5 pairs of sample frames had a purchase conversion rate of 79.2%
- Conversion was nearly 50% higher than for customers who only had the chance to try 3 pairs at home (53% conversion)

```
1  --> Purchase conversion by number of sample pairs sent home
2
3  WITH browse AS (
4    SELECT DISTINCT q.user_id,
5      h.user_id IS NOT NULL AS 'is_home_try_on',
6      h.number_of_pairs,
7      p.user_id IS NOT NULL AS 'is_purchase'
8    FROM quiz q
9    LEFT JOIN home_try_on h
10     ON q.user_id = h.user_id
11    LEFT JOIN purchase p
12     ON p.user_id = q.user_id)
13
14  SELECT
15    COUNT (CASE WHEN number_of_pairs = '3 pairs'
16      THEN user_id
17      ELSE NULL
18    END)
19    AS '3_pairs',
20    COUNT (CASE WHEN number_of_pairs = '5 pairs'
21      THEN user_id
22      ELSE NULL
23    END)
24    AS '5_pairs',
25    COUNT (CASE WHEN is_purchase = 1
26      THEN user_id
27      ELSE NULL
28    END)
29    AS 'bought'
30  FROM browse
31  GROUP BY number_of_pairs;
```


4. Purchase Behavior: Overview I

The Warby Parker purchase data confirm some of what the style quiz results showed and offer more insights into the customer.

Purchase Breakdown

model_name	color	style	units	price
Brady	Layered Tortoise Matte	Men's Styles	52	95
Brady	Sea Glass Gray	Men's Styles	43	95
Dawes	Driftwood Fade	Men's Styles	63	150
Dawes	Jet Black	Men's Styles	44	150
Eugene Narrow	Rose Crystal	Women's Styles	54	95
Eugene Narrow	Rosewood Tortoise	Women's Styles	62	95
Lucy	Elderflower Crystal	Women's Styles	44	150
Lucy	Jet Black	Women's Styles	42	150
Monocle	Endangered Tortoise	Men's Styles	41	50
Olive	Pearled Tortoise	Women's Styles	50	95

price	count price	style	count style
95	261	Women's Styles	252
150	193	Men's Styles	243
50	41		

FINDINGS:

- Split between style units sold essentially mirrors quiz results of male / female customer split
- Warby customers are comfortable spending more for eyeglass frames
- Styles with more than one color option have higher sales

```
1  --> Purchase table queries
2  SELECT style, COUNT (user_id) AS 'count style'
3  FROM purchase
4  GROUP BY 1
5  ORDER BY 2 DESC;
6
7  SELECT price, COUNT (user_id) AS 'count price'
8  FROM purchase
9  GROUP BY 1
10 ORDER BY 2 DESC;
11
12 WITH aggregate AS (
13     SELECT model_name, color, style, COUNT (user_id) AS units, price
14     FROM purchase
15     GROUP BY 1, 2)
16
17 SELECT model_name, SUM(units)
18 FROM aggregate
19 GROUP BY 1
20 ORDER BY 2 DESC;
21
22 WITH aggregate AS (
23     SELECT model_name, color, style, COUNT (user_id) AS units, price
24     FROM purchase
25     GROUP BY 1, 2)
26
27 SELECT color, SUM(units)
28 FROM aggregate
29 GROUP BY 1
30 ORDER BY 2 DESC;
```

4. Purchase Behavior: Overview II

Aggregating some of the purchase data shed light on performance of the Warby Parker inventory.

Purchase Table Aggregated Data

model_name	style	SUM(units)	color	SUM(units)
Eugene Narrow	Women's Styles	116	Jet Black	86
Dawes	Men's Styles	107	Driftwood Fade	63
Brady	Men's Styles	95	Rosewood Tortoise	62
Lucy	Women's Styles	86	Rose Crystal	54
Olive	Women's Styles	50	Layered Tortoise Matte	52
Monocle	Men's Styles	41	Pearled Tortoise	50
			Elderflower Crystal	44
			Sea Glass Gray	43
			Endangered Tortoise	41

FINDINGS:

- The Eugene Narrow is the top-selling overall style, with a clear spread between the next most popular women's style (Lucy)
- There is less of a unit sales difference between the top two men's styles (Dawes, Brady)
- Black never goes out of style, though the different color options of Tortoise frames show it to be the top-seller overall

```
1 --> Purchase table queries
2 SELECT style, COUNT (user_id) AS 'count style'
3 FROM purchase
4 GROUP BY 1
5 ORDER BY 2 DESC;
6
7 SELECT price, COUNT (user_id) AS 'count price'
8 FROM purchase
9 GROUP BY 1
10 ORDER BY 2 DESC;
11
12 WITH aggregate AS (
13     SELECT model_name, color, style, COUNT (user_id) AS units, price
14     FROM purchase
15     GROUP BY 1, 2)
16
17 SELECT model_name, SUM(units)
18 FROM aggregate
19 GROUP BY 1
20 ORDER BY 2 DESC;
21
22 WITH aggregate AS (
23     SELECT model_name, color, style, COUNT (user_id) AS units, price
24     FROM purchase
25     GROUP BY 1, 2)
26
27 SELECT color, SUM(units)
28 FROM aggregate
29 GROUP BY 1
30 ORDER BY 2 DESC;
```

4. Purchase Behavior: None More Black

Recall from the style quiz results, the second most popular color for frames was black.

Do customers who say they prefer black actually buy black frames from Warby Parker?

4. Which colors do you like?		
Color	Count Color	% of Quiz Takers*
Tortoise	292	29.2%
Black	280	28.0%
Crystal	210	21.0%
Neutral	114	11.4%
Two-Tone	104	10.4%

* N= 1000 completed surveys in quiz table

FINDINGS:

- Tortoise had a slight plurality over black among quiz takers for color preference (29.2% > 28%)
- Yet it was runaway leader among purchases from Warby Parker customers who say they prefer black given the myriad of Tortoise variations
 - Trust what people do, not necessarily what they say

Frames Bought by Quiz Takers Who Say They Like Black Frames	
Purchase Color	Count
Jet Black	24
Rosewood Tortoise	23
Driftwood Fade	17
Layered Tortoise Matte	17
Pearled Tortoise	17
Sea Glass Gray	17
Rose Crystal	15
Elderflower Crystal	10
Endangered Tortoise	10
Total Frames	150
% Black	16%
Total Tortoise	67
% Tortoise	44.7%

```
1  ----> None More Black
2
3  SELECT DISTINCT COUNT(user_id)
4  FROM quiz;
5
6  SELECT color, COUNT(user_id)
7  FROM quiz
8  GROUP BY 1
9  ORDER BY 2 DESC;
10
11 SELECT 1.0 * 280. / 1000;
12
13 WITH black AS (
14     SELECT quiz.user_id,
15            quiz.color AS 'quiz_color',
16            purchase.color AS 'purchase_color'
17     FROM quiz
18     LEFT JOIN purchase
19     ON quiz.user_id = purchase.user_id
20     WHERE quiz.color IS 'Black'
21     AND purchase.user_id IS NOT NULL)
22
23 SELECT purchase_color, COUNT (user_id)
24 FROM black
25 GROUP BY purchase_color
26 ORDER BY 2 DESC;
27
28 SELECT COUNT (user_id) AS 'Tortoise'
29 FROM black
30 WHERE purchase_color LIKE '%Tortoise%';
```

5. Recommendations

1. Send five pairs of frames to customers for the Try-At-Home program
2. Suggest always including a pair of “Lucy” (2nd best seller, top price) and “Eugene Narrow” (top seller, mid-price) frames for women for the Try-at-Home program
3. Similarly for men, suggest always including “Brady” (2nd best seller, top price) and “Dawes” (top seller, mid-price) frame for at-home consideration
4. Suggest dropping \$50 frames from inventory (less than 10% of sales) and replacing with models between \$95 - \$150 to raise average order value
5. Suggest always including a black AND a tortoise frame for customers to try on
6. Would have liked to been able to join sales data to customers answering the eye exam question: who is more likely to purchase, regular eye-checkers or delinquents?
 - a. Based on answer percentage only, recommend consider dropping question from quiz



Thank you, Code Academy!
Regards,
Tim Frommer