



Warby Parker Funnel Capstone

Learn SQL from Scratch

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1. Style Quiz

Style Quiz

A Style Quiz was created to navigate potential customers through the eye glass selection process. The quiz asks five questions and example results from the table are shown below.

Question 1: What columns does the table have?

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

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

Style Quiz

The Style Quiz asks the following five questions and the number of responses by question are shown below.

Question	Number of Answers
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

Question 2: What is the number of responses for each question?

```
SELECT question, COUNT(*) AS 'count'  
FROM survey  
GROUP BY question  
ORDER BY question;
```

Style Quiz

The response rates for each survey question are shown below. The calculation takes the number of responses for that question and divides it by the number of responses for the prior question.

Question	Number of Answers	Response %
1. What are you looking for?	500	100.0%
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%

Question 3:

Calculate the percentage of users that answered each question. Which questions have a lower response percentage? Why do you think that is the case?

Questions 3 and 5 have the lowest response percentages.

The third question in the quiz has the second lowest response percentage because some may need help deciding which eyeglass shape looks best on them. Providing a guide that recommends the best eyeglass shape for each face shape may improve the responses.

The fifth question in the quiz has the lowest response percentage likely because some do not remember when they last had an eye exam. A better question may be to ask if they have a current prescription or do they need to have it updated.

2. A/B Testing with Home Try-On Funnel

A/B Test: 3 Pair vs 5 Pair

Warby Parker setup an A/B test to see if receiving three pair or five pair of glasses to try on at home produced better results. The data from the test is stored in three files as shown below.

quiz table

user_id	style	fit	shape	color
4e8118dc-bb3d-49bf-85fc-cca8d83232ac	Women's Styles	Medium	Rectangular	Tortoise

home_try_on table

user_id	number_of_pairs	address
d8add87-3217-4429-9a01-d56d68111da7	5 pairs	145 New York 9a

purchase table

user_id	product_id	style	model_name	color	price
00a9dd17-36c8-430c-9d76-df49d4197dcf	8	Women's Styles	Lucy	Jet Black	150

Question 4:

What are the columns in each of the tables?

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

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

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


Home Try-On Funnel

To analyze the results we need to make a new table that combines the data found in the three base tables (quiz, home_try_on, and purchase). An example of the new table results are shown below.

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		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

Question 5: Make a new table combining the three base tables so the results can be analyzed.

```
SELECT quiz.user_id,  
CASE  
  WHEN home_try_on.user_id IS NOT NULL  
  THEN 'True'  
  ELSE 'False'  
END AS 'is_home_try_on',  
home_try_on.number_of_pairs,  
CASE  
  WHEN purchase.user_id IS NOT NULL  
  THEN 'True'  
  ELSE 'False'  
END AS 'is_purchase'  
FROM quiz  
LEFT JOIN home_try_on  
ON quiz.user_id = home_try_on.user_id  
LEFT JOIN purchase  
ON quiz.user_id = purchase.user_id  
LIMIT 10;
```

Home Try-On Funnel Results

To calculate the overall conversion rates we need to count the results of test responses. Building off the last query we just need to total the results. The conversion rates are shown on the next slide.

is_home_try_on	number_of_pairs	is_purchase	users
True	3 pairs	True	201
True	3 pairs	False	178
True	5 pairs	True	294
True	5 pairs	False	77
False		False	250

Question 6: What are the overall conversion rates?

```
WITH home_test AS (  
  SELECT quiz.user_id,  
    CASE  
      WHEN home_try_on.user_id IS NOT NULL  
      THEN 'True'  
      ELSE 'False'  
    END AS 'is_home_try_on',  
    home_try_on.number_of_pairs,  
    CASE  
      WHEN purchase.user_id IS NOT NULL  
      THEN 'True'  
      ELSE 'False'  
    END AS 'is_purchase'  
  FROM quiz  
  LEFT JOIN home_try_on  
  ON quiz.user_id = home_try_on.user_id  
  LEFT JOIN purchase  
  ON quiz.user_id = purchase.user_id)  
SELECT is_home_try_on, number_of_pairs, is_purchase,  
  COUNT(user_id) AS 'users'  
FROM home_test  
GROUP BY 1, 2, 3  
ORDER BY 1 DESC, 2, 3 DESC;
```

Home Try-On Funnel Results

Shown below are the conversion rates for the 3 pair verse 5 pair home try-on test.

Funnel Test Point	Number Of Users	Conversion Rate
Users that took the quiz	1,000	
Users that took glasses home to try-on	750	75.0%
Users that took home 3 pairs	379	50.5%
Users that took home 3 pairs and made a purchase	201	53.0%
Users that took home 5 pairs	371	49.5%
Users that took home 5 pairs and made a purchase	294	79.2%

Question 6: What are the overall conversion rates?

The 5 pair group definitely created better conversion rates than the 3 pair group.

3. Home Try-On Additional Analysis

Home Try-On Funnel Results by Style and Price

Additional analysis viewed by style and price.

is_home_try_on	number_of_pairs	style	is_purchase	users	price
True	3 pairs	Women's Styles	True	98	\$10,960
True	3 pairs	Women's Styles	False	79	
True	3 pairs	Men's Styles	True	103	\$11,805
True	3 pairs	Men's Styles	False	62	
True	3 pairs	I'm not sure. Let's skip it.	False	37	
True	5 pairs	Women's Styles	True	154	\$17,710
True	5 pairs	Women's Styles	False	30	
True	5 pairs	Men's Styles	True	140	\$15,320
True	5 pairs	Men's Styles	False	15	
True	5 pairs	I'm not sure. Let's skip it.	False	32	
False		Women's Styles	False	108	
False		Men's Styles	False	112	
False		I'm not sure. Let's skip it.	False	30	

Question 6 Additional Analysis: By Style and Price

```
WITH home_test AS (
SELECT quiz.user_id,
CASE
  WHEN home_try_on.user_id IS NOT NULL
  THEN 'True'
  ELSE 'False'
END AS 'is_home_try_on',
home_try_on.number_of_pairs, quiz.style,
CASE
  WHEN purchase.user_id IS NOT NULL
  THEN 'True'
  ELSE 'False'
END AS 'is_purchase', purchase.price
FROM quiz
LEFT JOIN home_try_on
ON quiz.user_id = home_try_on.user_id
LEFT JOIN purchase
ON quiz.user_id = purchase.user_id)
SELECT is_home_try_on, number_of_pairs, style, is_purchase,
COUNT(user_id) AS 'users', SUM(price) AS 'price'
FROM home_test
GROUP BY 1, 2, 3, 4
ORDER BY 1 DESC, 2, 3 DESC, 4 DESC;
```

Home Try-On Funnel Results Including Style and Price

When we drill into the data by style we see a difference between men and women styles both in the 3 pair and 5 pair groups for conversion rates and average purchase price.

By Style	3 Pairs			5 Pairs		
	Number Of Users	Conversion Rate	Avg Price Per User	Number Of Users	Conversion Rate	Avg Price Per User
Women's total	177			184		
Women's purchased	98	55.3%	\$111.84	154	83.7%	\$115.00
Men's total	165			155		
Men's purchased	103	62.4%	\$114.61	140	90.3%	\$109.43
Not Sure total	37			32		
Not Sure purchased	0	0.0%		0	0.0%	

Question 6 Additional analysis: By Style & Price

Women's styles are showing an increase in conversion rate and in average price.

Men's styles are showing an increase in conversion rate, but a drop in average price.

Home Try-On Funnel Results by Most Popular Style

The below tables show the top five styles purchased for men and women glasses.

Style	Fit	Shape	Color	Users	Price	Avg Price
Men's Styles	Narrow	Rectangular	Tortoise	14	\$1,880	\$134
Men's Styles	Medium	Rectangular	Black	12	\$1,425	\$118
Men's Styles	Medium	Rectangular	Tortoise	11	\$1,175	\$106
Men's Styles	Narrow	Rectangular	Black	10	\$1,025	\$102
Men's Styles	Narrow	Rectangular	Crystal	9	\$1,030	\$114

Style	Fit	Shape	Color	Users	Price	Avg Price
Women's Styles	Narrow	Rectangular	Black	11	\$1,265	\$115
Women's Styles	Medium	Rectangular	Black	9	\$965	\$107
Women's Styles	Narrow	Rectangular	Tortoise	9	\$1,075	\$119
Women's Styles	Narrow	Square	Black	9	\$965	\$107
Women's Styles	Medium	Rectangular	Crystal	8	\$925	\$115

Question 6 Additional analysis: By Most Popular Style

```
WITH home_test AS (  
  SELECT quiz.user_id,  
    CASE  
      WHEN home_try_on.user_id IS NOT NULL  
      THEN 'True'  
      ELSE 'False'  
    END AS 'is_home_try_on',  
    home_try_on.number_of_pairs, quiz.style, quiz.fit, quiz.shape,  
    quiz.color, purchase.price,  
    CASE  
      WHEN purchase.user_id IS NOT NULL  
      THEN 'True'  
      ELSE 'False'  
    END AS 'is_purchase'  
  FROM quiz  
  LEFT JOIN home_try_on  
  ON quiz.user_id = home_try_on.user_id  
  LEFT JOIN purchase  
  ON quiz.user_id = purchase.user_id)  
SELECT style, fit, shape, color, COUNT(user_id) AS 'users', SUM(price)  
AS 'price', 1.0 * round(SUM(price) / COUNT(user_id),2) AS 'avg price'  
FROM home_test  
WHERE is_purchase = 'True'  
GROUP BY 1, 2, 3, 4  
ORDER BY 1 DESC, users DESC;
```

Home Try-On Funnel Most Popular (Men's Style)

Shown here are the conversion rates for the top five men's styles from the quiz with purchase price.

MEN'S STYLE	Quiz	Purchased		
Most Popular	Number Of Users	Number Of Users	Conversion Rate	Avg Price Per User
Narrow-Rectangular-Tortoise	23	14	60.8%	\$134
Medium-Rectangular-Tortoise	19	11	57.9%	\$106
Narrow-Rectangular-Black	18	10	55.5%	\$102
Medium-Rectangular-Black	17	12	70.6%	\$118
Narrow-Square-Tortoise	16	8	50.0%	\$111

Additional analysis: Most Popular Quiz vs Purchased

For most popular from Quiz

```
SELECT style, fit, shape, color, COUNT (user_id) AS 'count'  
FROM quiz  
GROUP BY 1, 2, 3, 4  
ORDER BY count DESC  
LIMIT 10;
```

For most popular from Purchase

Used the slide 15 query and selected the purchase results for the top five styles from the quiz

Notice the low price for the second and third most popular men's styles. May be an opportunity to raise the price of these styles.

Home Try-On Funnel Most Popular (Women's Style)

Shown here are the conversion rates for the top five women's styles from the quiz with purchase price.

WOMEN'S STYLE	Quiz	Purchased		
Most Popular	Number Of Users	Number Of Users	Conversion Rate	Avg Price Per User
Narrow-Rectangular-Black	20	11	55.0%	\$115
Narrow-Rectangular-Tortoise	20	9	45.0%	\$119
Medium-Rectangular-Tortoise	16	7	43.7%	\$126
Medium-Square-Tortoise	16	6	37.5%	\$122
Narrow-Square-Crystal	16	7	43.7%	\$118

Additional analysis: Most Popular Quiz vs Purchased

For most popular from Quiz

```
SELECT style, fit, shape, color, COUNT (user_id) AS 'count'  
FROM quiz  
GROUP BY 1, 2, 3, 4  
ORDER BY count DESC  
LIMIT 10;
```

For most popular from Purchase

Used the slide 15 query and selected the purchase results for the top five styles from the quiz

Notice the low conversion rates from the most popular quiz styles. Providing more tools to help the user choose the best style during the quiz may increase conversion rates.

4. Observations and Recommendations

Observations and Recommendations

Observations

- Women are purchasing a different style than what they indicated in the quiz.
- The average price is dropping for men's styles in the 5 pair group verse the 3 pair group despite a very high conversion rate.

Recommendations

- Providing a guide of best eyeglass shape for each face shape may help conversion in the quiz and more consistent results between the quiz and purchases.
- Raising the price of the Men's medium-rectangular-tortoise and medium-rectangular-black glasses to be more in line with the pricing of those same styles in Women's could increase overall sales. Those are the second and third most purchased glasses for men.