Capstone: Usage Funnels with Warby Parker

LEARN SQL FROM SCRATCH
Tina Higgins | November 14, 2018
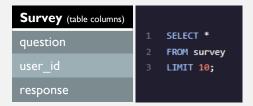
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1. GET FAMILIAR WITH WARBY PARKER

RECAP

✓ What columns does the "survey" table have?

✓ Create a quiz funnel. What is the number of responses for each question?

✓ Using Excel, calculate the percentage of users who answer each question.

✓ Which question(s) of the quiz have a lower completion rate?

✓ What do I think the reason is for the lower completion rate?

Warby Parker is an eyewear designer looking to analyze the conversion rates of their survey questions. We are going calculate which questions have the lowest completion rate and analyze the survey.

✓ What columns does the "survey" table have?

Survey (table columns)
question
user_id
response

```
1   SELECT *
2   FROM survey
3   LIMIT 10;
```

✓ Calculate the percentage of users who answer each question.

	A	B	C	D
1	"What are you looking for?"	500	Total number is automatically at 100%	100%
2	"What's your fit?"	475	<--divide by previous (500)	95%
3	"Which shapes do you like?"	380	<--divide by previous (475)	80%
4	"Which colors do you like?"	361	<--divide by previous (380)	95%
5	"When was your last eye exam?"	270	<--divide by previous (361)	74%

✓ What is the number of responses for each question?

Question	User Count
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

```
1   SELECT question, COUNT(DISTINCT user_id) AS 'User Count'
2   FROM survey
3   GROUP BY 1;
```

Which questions have the lowest completion rates? And what do I think the reason is for the lower completion rate?

1. **Which shapes do you like? (80%)** *Possible Reason*: A possible reason is that there may be a good chunk of people who do not like any of the shapes offered and it may be beneficial for the company to look into some additional shapes to offer. For example as with the colors, there were many choices and that question shows a high percentage answered.

2. **When was your last eye exam? (74%)** *Possible Reason*: One possible reason is that people do not remember when they last got an eye exam or maybe they never have. Another reason may be, for example; when I took the quiz, this is the question I exited because I have never had an eye exam to receive prescription glasses. I was hoping that Warby Parker offered reading glasses as well as prescription. Since they didn't, I exited the question.

2. WHAT IS THE QUIZ FUNNEL?

WHAT IS THE QUIZ FUNNEL?

RECAP

- ✓ Describe Wary Parker's Quiz Funnel and explain its purpose.

- ✓ Examine the first five rows of each table, what are the column names?

- ✓ Create a new table using the given format.

- ✓ Find out if users who get more pairs to try on at home, will be more likely to make a purchase.

Warby Parker purchase funnel consists of: "Take the Style Quiz" → "Home Try-On" → "Purchase the Perfect Pair of Glasses". Our goal here is to find out if customers who receive additional pairs to try on at home will be more likely to make a purchase.

✓ Examine the first five rows of each table. What are the column names?

3 Tables		
quiz	home_try_on	purchase
user_id	user_id	user_id
style	number_of_pairs	product_id
fit	address	style
shape		model_name
color		color
		price

Column Names

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

✓ Are users who get more pairs to try on at home more likely to make a purchase?

Query Results	
number_of_pairs	Purchased
5 pairs	294

```
1   WITH funnels AS (SELECT DISTINCT q.user_id,
2       h.user_id IS NOT NULL AS 'is_home_try_on',
3       h.number_of_pairs,
4       p.user_id IS NOT NULL AS 'is_purchase'
5   FROM quiz q
6   LEFT JOIN home_try_on h
7       ON q.user_id = h.user_id
8   LEFT JOIN purchase p
9       ON p.user_id = q.user_id)
10  SELECT number_of_pairs, SUM(is_purchase) AS 'Purchased'
11  FROM funnels
12  WHERE number_of_pairs = '5 pairs';
```

Query Results	
number_of_pairs	Purchased
3 pairs	201

```
1   WITH funnels AS (SELECT DISTINCT q.user_id,
2       h.user_id IS NOT NULL AS 'is_home_try_on',
3       h.number_of_pairs,
4       p.user_id IS NOT NULL AS 'is_purchase'
5   FROM quiz q
6   LEFT JOIN home_try_on h
7       ON q.user_id = h.user_id
8   LEFT JOIN purchase p
9       ON p.user_id = q.user_id)
10  SELECT number_of_pairs, SUM(is_purchase) AS 'Purchased'
11  FROM funnels
12  WHERE number_of_pairs = '3 pairs';
```

✓ Create a new table using the given format.

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

```
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;
```

Answer: Looks like customers who tried 5 pairs at home were more likely to make a purchase!

3. A/B TESTING WITH HOME TRY-ON FUNNEL

What are the most common types of purchases made? The types of purchases are product_id, style, model_name, color, price.

RECAP

What are the most common types of purchases made?

- ✓ What is the most purchased style?
- ✓ What are the most product_ids?

The most purchased **Style**, is "Women's Style"

Query Results	
style	
Women's Styles	
Men's Styles	

style	count
Women's Styles	469

style	count
Men's Styles	432

```
1  SELECT DISTINCT(style)
2  FROM purchase;
3
4  SELECT style, COUNT(*) AS 'count'
5  FROM quiz
6  WHERE Style = "Women's Styles";
7
8  SELECT style, COUNT(*) AS 'count'
9  FROM quiz
0  WHERE Style = "Men's Styles";
```

The most purchased **product_ids**, are 3 & 10

Query Results
product_id
8
7
4
10
3
2
5
1
9
6

product_id	count
1	52
product_id	count
2	43
product_id	count
3	63
product_id	count
4	44
product_id	count
5	41
product_id	count
6	50
product_id	count
7	44
product_id	count
8	42
product_id	count
9	54
product_id	count
10	62

```
1   SELECT DISTINCT(product_id)
2   FROM purchase;
3
4   SELECT product_id, COUNT(*) AS 'count'
5   FROM purchase
6   WHERE product_id = "1";
7
8   SELECT product_id, COUNT(*) AS 'count'
9   FROM purchase
10  WHERE product_id = "2";
11  SELECT product_id, COUNT(*) AS 'count'
12  FROM purchase
13  WHERE product_id = "3";
14  SELECT product_id, COUNT(*) AS 'count'
15  FROM purchase
16  WHERE product_id = "4";
17  SELECT product_id, COUNT(*) AS 'count'
18  FROM purchase
19  WHERE product_id = "5";
20  SELECT product_id, COUNT(*) AS 'count'
21  FROM purchase
22  WHERE product_id = "6";
23  SELECT product_id, COUNT(*) AS 'count'
24  FROM purchase
25  WHERE product_id = "7";
26  SELECT product_id, COUNT(*) AS 'count'
27  FROM purchase
28  WHERE product_id = "8";
29  SELECT product_id, COUNT(*) AS 'count'
30  FROM purchase
31  WHERE product_id = "9";
32  SELECT product_id, COUNT(*) AS 'count'
33  FROM purchase
34  WHERE product_id = "10";
```
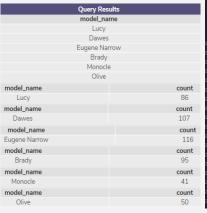
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What are the most common types of purchases made?

✓ What is the most purchased model?

✓ What is the most purchased color?

…Continued from the last page

What are the most common types of purchases made? The types of purchases are product_id, style, model_name, color, price.

The most purchased **Model**, is "Eugene Narrow

Query Results	
model_name	
Lucy	
Dawes	
Eugene Narrow	
Brady	
Monocle	
Olive	

model_name	count
Lucy	86

model_name	count
Dawes	107

model_name	count
Eugene Narrow	116

model_name	count
Brady	95

model_name	count
Monocle	41

model_name	count
Olive	50

```sql
SELECT DISTINCT(model_name)
FROM purchase;

SELECT model_name, COUNT(*) AS 'count'
FROM purchase
WHERE model_name = "Lucy";

SELECT model_name, COUNT(*) AS 'count'
FROM purchase
WHERE model_name = "Dawes";

SELECT model_name, COUNT(*) AS 'count'
FROM purchase
WHERE model_name = "Eugene Narrow";

SELECT model_name, COUNT(*) AS 'count'
FROM purchase
WHERE model_name = "Brady";

SELECT model_name, COUNT(*) AS 'count'
FROM purchase
WHERE model_name = "Monocle";

SELECT model_name, COUNT(*) AS 'count'
FROM purchase
WHERE model_name = "Olive";
```

The most purchased **Color**, is "Jet Black

Query Results	
color	
Jet Black	
Elderflower Crystal	
Rosewood Tortoise	
Driftwood Fade	
Sea Glass Gray	
Endangered Tortoise	
Layered Tortoise Matte	
Rose Crystal	
Pearled Tortoise	

color	count
Jet Black	86

color	count
Elderflower Crystal	44

color	count
Rosewood Tortoise	62

color	count
Driftwood Fade	63

color	count
Sea Glass Gray	43

color	count
Endangered Tortoise	41

color	count
Layered Tortoise Matte	52

color	count
Rose Crystal	54

color	count
Pearled Tortoise	50

```sql
SELECT DISTINCT(color)
FROM purchase;

SELECT color, COUNT(*) AS 'count'
FROM purchase
WHERE color = "Jet Black";

SELECT color, COUNT(*) AS 'count'
FROM purchase
WHERE color = "Elderflower Crystal"

SELECT color, COUNT(*) AS 'count'
FROM purchase
WHERE color = "Rosewood Tortoise";

SELECT color, COUNT(*) AS 'count'
FROM purchase
WHERE color = "Driftwood Fade";

SELECT color, COUNT(*) AS 'count'
FROM purchase
WHERE color = "Sea Glass Gray";

SELECT color, COUNT(*) AS 'count'
FROM purchase
WHERE color = "Endangered Tortoise"

SELECT color, COUNT(*) AS 'count'
FROM purchase
WHERE color = "Layered Tortoise Mat

SELECT color, COUNT(*) AS 'count'
FROM purchase
WHERE color = "Rose Crystal";

SELECT color, COUNT(*) AS 'count'
FROM purchase
WHERE color = "Pearled Tortoise";
```

The most common Purchases are:
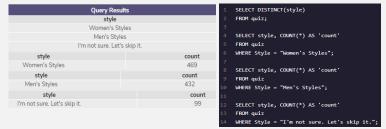Women's Style ★ Product Id# 3 & 10 ★ Eugene Narrow Model ★ Jet Black Color

Here, we are going to use original tables to find the most common results of the style quiz. There are style, fit, shape & color.
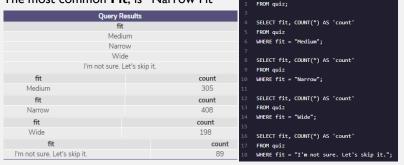
RECAP

- ✓ Describe Wary Parker's Quiz Funnel and explain its purpose.

- ✓ Examine the first five rows of each table, what are the column names?

- ✓ Create a new table using the given format.

- ✓ Find out if users who get more pairs to try on at home, will be more likely to make a purchase.

The most common **Style**, is "Women's Style"

Query Results	
style	
Women's Styles	
Men's Styles	
I'm not sure. Let's skip it.	

style	count
Women's Styles	469

style	count
Men's Styles	432

style	count
I'm not sure. Let's skip it.	99

```
1   SELECT DISTINCT(style)
2   FROM quiz;
3
4   SELECT style, COUNT(*) AS 'count'
5   FROM quiz
6   WHERE Style = "Women's Styles";
7
8   SELECT style, COUNT(*) AS 'count'
9   FROM quiz
10  WHERE Style = "Men's Styles";
11
12  SELECT style, COUNT(*) AS 'count'
13  FROM quiz
14  WHERE Style = "I'm not sure. Let's skip it.";
```

The most common **Shape**, is "Rectangular"

Query Results	
shape	
Rectangular	
Round	
Square	
No Preference	

shape	count
Rectangular	397

shape	count
Round	180

shape	count
Square	326

shape	count
No Preference	97

```
1   SELECT DISTINCT(shape)
2   FROM quiz;
3
4   SELECT shape, COUNT(*) AS 'count'
5   FROM quiz
6   WHERE shape = "Rectangular";
7
8   SELECT shape, COUNT(*) AS 'count'
9   FROM quiz
10  WHERE shape = "Round";
11
12  SELECT shape, COUNT(*) AS 'count'
13  FROM quiz
14  WHERE shape = "Square";
15
16  SELECT shape, COUNT(*) AS 'count'
17  FROM quiz
18  WHERE shape = "No Preference";
```

The most common **Fit**, is "Narrow Fit"

Query Results	
fit	
Medium	
Narrow	
Wide	
I'm not sure. Let's skip it.	

fit	count
Medium	305

fit	count
Narrow	408

fit	count
Wide	198

fit	count
I'm not sure. Let's skip it.	89

```
1   SELECT DISTINCT(fit)
2   FROM quiz;
3
4   SELECT fit, COUNT(*) AS 'count'
5   FROM quiz
6   WHERE fit = "Medium";
7
8   SELECT fit, COUNT(*) AS 'count'
9   FROM quiz
10  WHERE fit = "Narrow";
11
12  SELECT fit, COUNT(*) AS 'count'
13  FROM quiz
14  WHERE fit = "Wide";
15
16  SELECT fit, COUNT(*) AS 'count'
17  FROM quiz
18  WHERE fit = "I'm not sure. Let's skip it.";
```

The most common **Color**, is "Tortoise"

```
1   SELECT DISTINCT(color)
2   FROM quiz;
3
4   SELECT color, COUNT(*) AS 'count'
5   FROM quiz
6   WHERE color = "Tortoise";
7
8   SELECT color, COUNT(*) AS 'count'
9   FROM quiz
10  WHERE color = "Black";
11
12  SELECT color, COUNT(*) AS 'count'
13  FROM quiz
14  WHERE color = "Two-Tone";
15
16  SELECT color, COUNT(*) AS 'count'
17  FROM quiz
18  WHERE color = "Crystal";
19
20  SELECT color, COUNT(*) AS 'count'
21  FROM quiz
22  WHERE color = "Neutral";
```

Query Results	
color	
Tortoise	
Black	
Two-Tone	
Crystal	
Neutral	

color	count
Tortoise	292

color	count
Black	280

color	count
Two-Tone	104

color	count
Crystal	210

color	count
Neutral	114

The most common styles are:

Women's Style ★ Narrow Fit

Rectangular Shape ★ Tortoise Color

A/B TESTING WITH HOME TRY-ON FUNNEL

RECAP

✓ Compare conversion from quiz → home_try_on & home_try_on → purchase.

✓ Calculate the overall conversion rates by aggregating across all rows.

✓ Compare Findings

Compare conversion from quiz → home_try_on & home_try_on → purchase. With this information, we will calculate the overall conversion rates by aggregating across all rows.

✓ Compare conversion from quiz → home_try_on and home_try_on → purchase

Looks like the conversion rate from *quiz to home_try_on* is .75 or 75%

1000 - is the total number of distinct customers who took part in the quiz before opting in for the home try on.

Query Results
COUNT(DISTINCT user_id)
1000

```
1   SELECT COUNT(DISTINCT user_id)
2     FROM quiz;
```

750 - is the total number of distinct customers who took part in home_try_on after taking the initial quiz.

Query Results
COUNT(DISTINCT user_id)
750

```
1   SELECT COUNT(DISTINCT user_id)
2     FROM home_try_on;
3
```

Looks like the conversion rate from *home_try_on → purchase* is .66 or 66%

750 - is the total number of distinct customers who took part in home try on before purchasing.

Query Results
COUNT(DISTINCT user_id)
750

```
1   SELECT COUNT(DISTINCT user_id)
2     FROM home_try_on;
3
```

495 - is the total number of customers who made a purchase after the home try on.

Query Results
COUNT(DISTINCT user_id)
495

```
1   SELECT COUNT(DISTINCT user_id)
2     FROM purchase;
```

✓ Aggregating across all rows

```
1   SELECT COUNT(DISTINCT user_id) AS 'quiz'
2     FROM quiz;
3
4   SELECT COUNT(DISTINCT user_id) AS 'Home Try-On'
5   FROM home_try_on;
6
7   SELECT COUNT(DISTINCT user_id) AS 'Purchase'
8     FROM purchase;
```

Query Results
quiz
1000
Home Try-On
750
Purchase
495

→ = funnel results

	A	B	C
1	Quiz	1000	100%
2	Home Try-On	750	75%
3	Purchase	495	66%
4			

Compare findings & Actionable Insights!

1. It looks like from the initial point of customers taking the quiz to the ultimate purchase outcome, right under 1/2 or 49% made purchases.
2. It looks like a large number of customers end up making purchases after the home try on phase. If Warby Parker could retain more of the customers lost during the quiz phase by revising the drop off questions, then the home try on phase may bring in even more purchases.

RECAP

- ✓ Calculate the difference in purchase rates between 3 & 5 pairs.

- ✓ What are some actionable insights for Warby Parker?

Users who get more pairs to try on at home are more likely to make a purchase! There was a **46%** increase in purchases!

Query Results	
number_of_pairs	Purchased
5 pairs	294

```
1   WITH funnels AS (SELECT DISTINCT q.user_id,
2       h.user_id IS NOT NULL AS 'is_home_try_on',
3       h.number_of_pairs,
4       p.user_id IS NOT NULL AS 'is_purchase'
5   FROM quiz q
6   LEFT JOIN home_try_on h
7       ON q.user_id = h.user_id
8   LEFT JOIN purchase p
9       ON p.user_id = q.user_id)
10  SELECT number_of_pairs, SUM(is_purchase) AS 'Purchased'
11  FROM funnels
12  WHERE number_of_pairs = '5 pairs';
```

Query Results	
number_of_pairs	Purchased
3 pairs	201

```
1   WITH funnels AS (SELECT DISTINCT q.user_id,
2       h.user_id IS NOT NULL AS 'is_home_try_on',
3       h.number_of_pairs,
4       p.user_id IS NOT NULL AS 'is_purchase'
5   FROM quiz q
6   LEFT JOIN home_try_on h
7       ON q.user_id = h.user_id
8   LEFT JOIN purchase p
9       ON p.user_id = q.user_id)
10  SELECT number_of_pairs, SUM(is_purchase) AS 'Purchased'
11  FROM funnels
12  WHERE number_of_pairs = '3 pairs';
```

Actionable insights for Warby Parker

1. I would suggest that Warby Parker remove the 3 pair option and proceed with offering their customers 5 pairs to try on. To waste postage, salary, time, etc on this option, its best to drop the waste and utilize the process that brings in most sales. There was a significant 46% increase in purchases between the two, with 5 pairs taking the lead!

2. When I compared the quiz → home_try_on with the home_try_on → purchase rates, it looks like We can see that a large portion of customers make a purchase after trying on the glasses at home. This seems like a successful rate for purchase and I would suggest continuing to add and refine to this path.

3. Since the women's styles are the most popular in both style category and in purchases outcomes, I would suggest offering more style choices for men as well as maybe a unisex category.