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Usage Funnels with Warby Parker

Learn SQL from Scratch

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1. Get familiar with Warby Parker

1.1 Who 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.

https://www.warbyparker.com

2. Quiz Funnel

2.1 Survey Table Analysis

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**. From the data stored in the survey table, you can determine the completion rate for each question.

The survey table has the following columns:
question,
user_id,
response

```
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

2.2 Create a Quiz funnel

Users will "give up" at different points in the survey. Let's analyze how many users move from Question 1 to Question 2, etc.

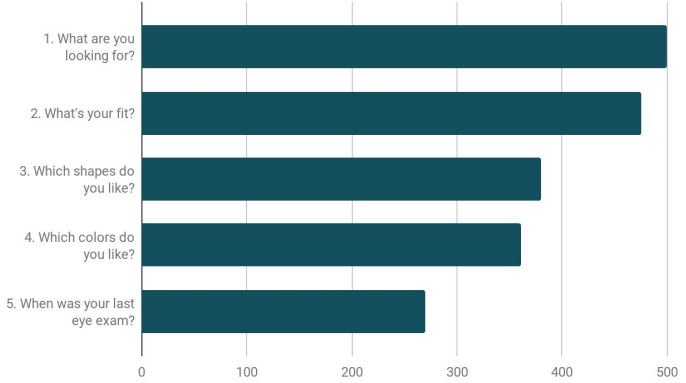
To determine the number of responses per question, the aggregate function **COUNT** with the **user_id** column can be used as well as **DISTINCT** to ensure the same customer has not answered multiple times.

You can group the count for each value in the question by using the **GROUP BY** statement.

The number of responses is shown on the table to the left.

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

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



2.3 Analysing the Quiz funnel

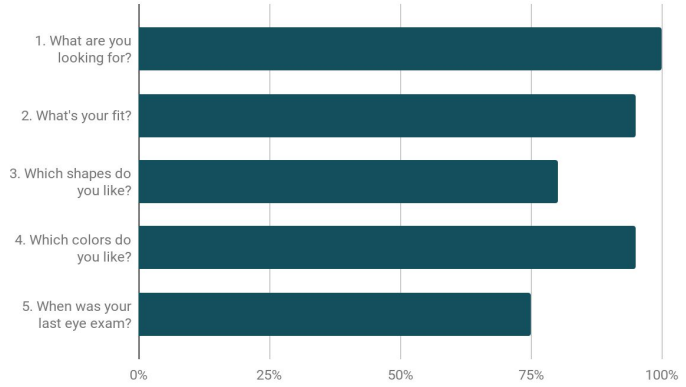
Calculate the percentage of users who answer each question.

Question 5 and **Question 3** has the lowest completion rates.

5. When was your last eye exam?
Question 5 has the lowest completion rates, probably because the customers could not remember when they had their last eye exam.
Suggestion
Remove Question 5 from the quiz.

3. Which shapes do you like?
Question 3 has the second lowest completion rates as customers might be unsure about the shapes they like or the shapes that will be most compatible with their facial structure.
Suggestion
Give the customers the option of skipping this question.

question	COUNT(DISTINCT user_id)	Percent Completing this Question
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%



3. Home Try_On Funnel

3.1 Home Try_On Funnel Analysis

Warby Parker's purchase funnel is:
Take the Style Quiz → Home Try-On → Purchase the Perfect Pair of Glasses.
Warby Parker wants to answer the following question by using
the purchase funnel analysis:
Whether customers who are sent 5 pairs of glasses to try on are more likely to make a purchase compared to customers sent 3 pairs of glasses?
The data will be distributed across three tables:

- quiz
- home_try_on
- purchase

```
SELECT *
FROM quiz
LIMIT 5;

SELECT *
FROM home_try_on
LIMIT 5;

SELECT *
FROM purchase
LIMIT 5;
```

quiz table columns:
user_id, style, fit, shape, color

home_try_on table columns:
user_id, number_of_pairs, address

purchase table columns:
user_id, product_id, style, model_name, color, price

quiz

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

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
3bc8f97f-2336-4dab-bd86-e391609dab97	5 pairs	182 Cornelia St

purchase

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

3.2 Home Try_On Funnel Analysis

We'd like to create a new table with the following layout:

user_id	is_home_try_on	number_of_pairs	is_purchase
4e8118dc	True	3	False
291f1cca	True	5	False
75122300	False	NULL	False

For analysis, you can JOIN the 3 tables into a single table using the **LEFT JOIN** function. The tables can be joined using the **user_id** column in each table.

Start the **LEFT JOIN** from the quiz table, then to the home_try_on table, and then the purchase table.

If the user has any entries in **home_try_on**, then **is_home_try_on** will be 1, otherwise 0.
number_of_pairs comes from **home_try_on** (3 pairs) or (5 pairs).
If the user has any entries in **purchase**, then **is_purchase** will be 1, otherwise 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 q.user_id = p.user_id
LIMIT 10;
```

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	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

3.3 Conversion Analysis

The funnel can be analysed to show conversion rates between steps in the customers journey.
Using the **WITH** statement, I can create a temporary table called funnel which I can use to complete my analysis.
Because **is_home_try_on** and **is_purchase** are columns with 1 and 0 to represent if customers is present or not present in their respective tables, I can use the aggregate function **SUM** on these columns to indicate how many customers participated in the home_try_on stage, or purchased a pair of glasses.

Total conversion:
The query at the bottom can be used to determine the total conversion rate between customers who complete the quiz and those that proceed on to purchase glasses.

The total conversion rate is **49%.**
The results of the query shows the data to the right.

```
WITH funnel 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 q.user_id = p.user_id)
SELECT COUNT(*) AS 'num_quiz',
            SUM(is_purchase) AS 'num_purchase',
            ROUND(1.0 * SUM(is_purchase) / COUNT(user_id), 2) AS 'to_purchase'
FROM funnel;
```

num_quiz	num_purchase	to_purchase
1000	495	0.49

3.4 Conversion Analysis Part 2

Conversion by (quiz → try on → purchase)
The query to the right shows the results at the bottom for the conversion rate for each step in the customers journey.

Conversion rate between **quiz** to **home_try_on** is **75%**.
Conversion rate between **home_try_on** to **purchase** is **66%**.

```
WITH funnel 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 q.user_id = p.user_id)
SELECT COUNT(*) AS 'num_quiz',
          SUM(is_home_try_on) AS 'num_try_on',
          SUM(is_purchase) AS 'num_purchase',
          ROUND(1.0 * SUM(is_home_try_on) / COUNT(user_id), 2) AS 'quiz_to_home_try_on',
          ROUND(1.0 * SUM(is_purchase) / SUM(is_home_try_on), 2) AS 'home_try_on_to_purchase'
FROM funnel;
```

num_quiz	num_try_on	num_purchase	quiz_to_home_try_on	home_try_on_to_purchase
1000	750	495	0.75	0.66

3.5 Conversion Analysis Part 3

Conversion by number of glasses
The query to the right shows the results at the bottom for the conversion rate between **home_try_on** and **purchase** for either 3 pairs or 5 pairs of glasses to try on.

Conversion rate is higher for customers trying on 5 pairs of glasses compared to customers trying on 3 pairs of glasses.

5 pairs of glasses: **79%.**
3 pairs of glasses: **53%.**

```
WITH funnel 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 q.user_id = p.user_id)
SELECT number_of_pairs,
            SUM(is_home_try_on) AS 'num_try_on',
            SUM(is_purchase) AS 'num_purchase',
            ROUND(1.0 * SUM(is_purchase) / SUM(is_home_try_on), 2) AS 'home_try_on_to_purchase'
FROM funnel
WHERE number_of_pairs IS NOT NULL
GROUP BY number_of_pairs;
```

number_of_pairs	num_try_on	num_purchase	home_try_on_to_purchase
3 pairs	379	201	0.53
5 pairs	371	294	0.79

4. Extra Analysis

4.1 Extra Analysis quiz Table

The following tables has been created to show the top selections for **style**, **fit**, **shape** and **color** selected by customers taking the quiz survey.

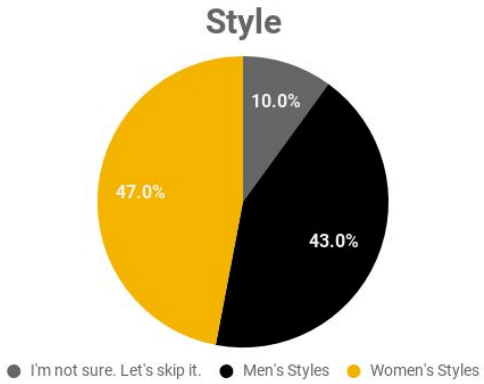
Data analysed from the **quiz** table.

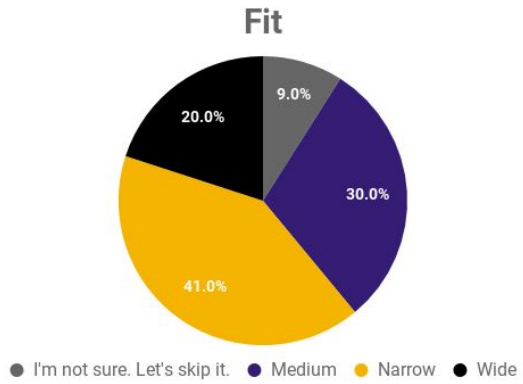
```
SELECT COUNT(style) AS count_style,
	style
FROM quiz
GROUP BY 2;

SELECT COUNT(fit) AS count_fit,
	fit
FROM quiz
GROUP BY 2;

SELECT COUNT(shape) AS count_shape,
	shape
FROM quiz
GROUP BY 2;

SELECT COUNT(color) AS count_color,
	color
FROM quiz
GROUP BY 2;
```

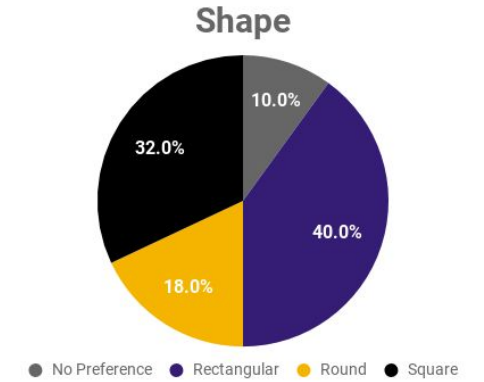
count_style	style
99	I'm not sure. Let's skip it.
432	Men's Styles
469	Women's Styles
count_fit	**fit**
89	I'm not sure. Let's skip it.
305	Medium
408	Narrow
198	Wide
count_shape	**shape**
97	No Preference
397	Rectangular
180	Round
326	Square
count_color	**color**
280	Black
210	Crystal
114	Neutral
292	Tortoise
104	Two-Tone

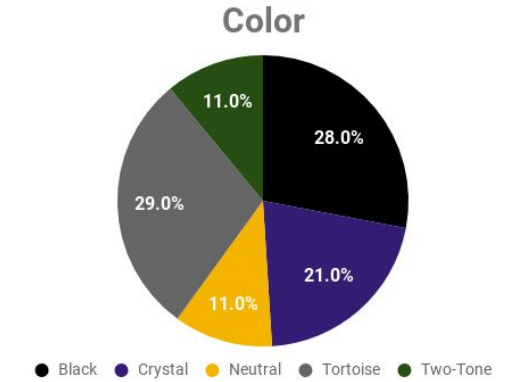
Total: 1000

4.1 Extra Analysis quiz Table









4.2 Extra Analysis purchase Table

The following tables has been created to show the top selections for **product_id, model_name, price, color and style** selected by customers purchasing the final product.

Data analysed from the **purchase** table.

```
SELECT COUNT(product_id) AS count_product_id,
        product_id
FROM purchase
GROUP BY 2;

SELECT COUNT(model_name) AS count_model_name,
        model_name
FROM purchase
GROUP BY 2;

SELECT COUNT(price) AS count_price,
        price
FROM purchase
GROUP BY 2;

SELECT COUNT(color) AS count_color,
        color
FROM purchase
GROUP BY 2;

SELECT COUNT(style) AS count_style,
        style
FROM purchase
GROUP BY 2;
```

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

count_model_name	model_name
95	Brady
107	Dawes
116	Eugene Narrow
86	Lucy
41	Monocle
50	Olive

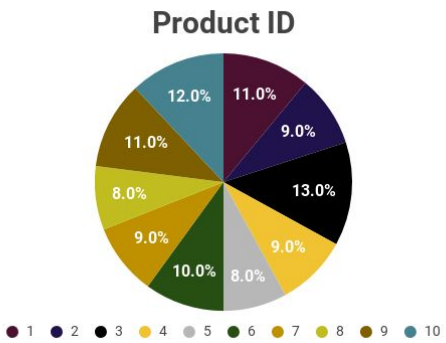
count_price	price
41	50
261	95
193	150

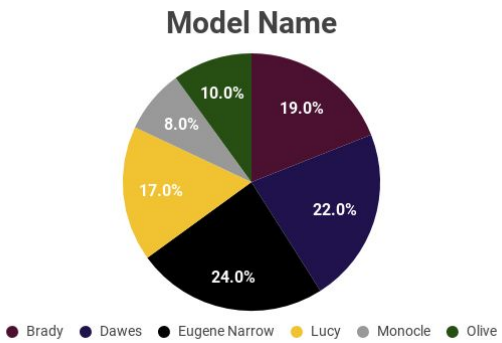
4.2 Extra Analysis purchase Table

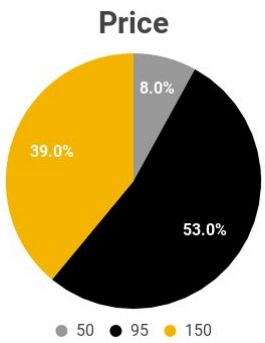
count_color	color
63	Driftwood Fade
44	Elderflower Crystal
41	Endangered Tortoise
86	Jet Black
52	Layered Tortoise Matte
50	Pearled Tortoise
54	Rose Crystal
62	Rosewood Tortoise
43	Sea Glass Gray
count_style	**style**
243	Men's Styles
252	Women's Styles

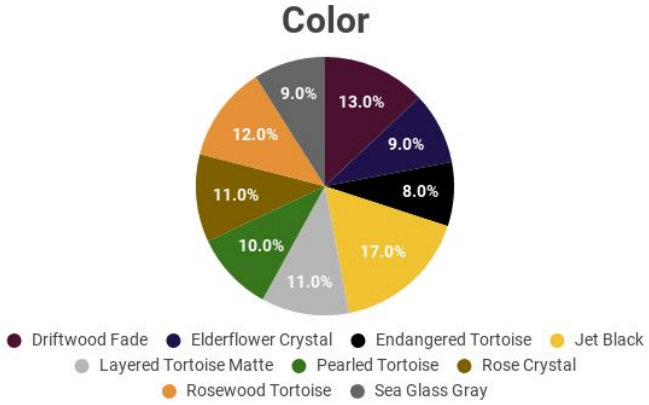
Total: 495

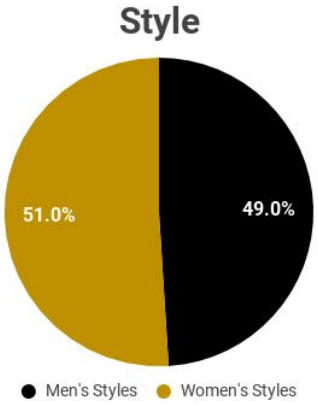
4.2 Extra Analysis purchase Table











4.2 Actionable Insights for Warby Parker

From the results obtained from aggregating across all rows of the LEFT JOIN table of **quiz, home_try_on** and **purchase**, a 1000 customers took the Style Quiz, out of these customers 250 did not go for the Home Try-On feature.
Out of the 750 customers that did, 379 were assigned the **3 pairs** option and 371 were assigned the **5 pairs** option.
79% of the customers who got to try the 5 pairs purchased, and only 53% of the customers who got to try the 3 pairs option purchased.

Warby Parker should utilize this to their benefit and send 5 pairs of glasses to more customers or maybe all customers, as 75% of the customers who try the quiz used the home try_on feature.

From the data in the quiz table, out of a 1000 customers.
47% prefer Women's Style
43% prefer Men's Style
10% skipped the question.
Rectangular shape, narrow fit and tortoise color are the top preferences.
40% Rectangular shape
41% Narrow fit
29% Tortoise Color

From the data in the purchase table, out of 495 customers.
51% prefer Women's Style
41% prefer Men's Style
Eugene Narrow model, Product ID 3 and Jet Black color are the top preferences.
24% Eugene Narrow model
13% Product ID 3
17% Jet Black color
53% of the customers purchase the models valued at the $95 price and only **8%** go for the $50 option.

Warby Parker should focus on expanding their product range in the narrow type fit, rectangular, square shapes and tortoise colors.
They should also look at boosting production of the $95 and $150 ranges as most customers seem to be willing to spend the extra amount for the higher quality items.