



Usage Funnels Project

Warby Parke

Analyze Data with SQL

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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.

In this project, you will analyze different Warby Parker's marketing funnels in order to calculate conversion rates. Here are the funnels and the tables that you are given:

Quiz Funnel:

- Survey

Home Try-On Funnel:

- quiz
- home_try_on
- purchase

Warby Parker Project Database Schema:

Database Schema		
home_try_on		750 rows
user_id		TEXT
number_of_pairs		TEXT
address		TEXT
purchase		495 rows
user_id		TEXT
product_id		INTEGER
style		TEXT
model_name		TEXT
color		TEXT
price		INTEGER
survey		1986 rows
question		TEXT
user_id		TEXT
response		TEXT
quiz		1000 rows
user_id		TEXT
style		TEXT
fit		TEXT
shape		TEXT
color		TEXT

Project Tasks:

1. From survey, Select all columns from the first 10 rows.
2. What is the number of responses for each survey question?
3. Using a spreadsheet program like Excel or Google Sheets, calculate the percentage of users who answer each question. Which question(s) of the quiz have a lower completion rates? What do you think is the reason?
4. 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.
5. 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

6. Once you have the data in the previous format, analyze it in several ways.

1. Project Task: survey

1.1 Description of the task

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.

Select all columns from the first 10 rows. What columns does the table have?

1.2 Query of the survey table

- The survey table consists of three columns:

question
user_id
response

- If not specified during the query the table rows are order by

user_id
response
question

- The database schema also lists the columns and the data type for each columns, and it has 1986 rows.

survey		1986 rows
question		TEXT
user_id		TEXT
response		TEXT

- We can see from the query output that the first customer listed on the table answered only the questions 1 and 2 and did not finish the survey quiz.

Query code

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

Query output

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. Project Task:

Number of responses for each question

2.1 Description of the task

Users will “give up” at different points in the survey.

Let’s analyze how many users move from Question 1 to Question 2, etc.

What is the number of responses for each question?

2.2 Query number of responses for each question

- We can answer the question, “What is the number of responses for each question?”, by querying one table.

The database scheme shows that all the information we need to answer the question, is contained in the survey table.

- The query output is a funnel representing the journey of the costumers answering questions, from the first question, “What are you looking for?”, to the last question, “When was your last eye exam?”

- The query of the survey table shows that about half of users starting the quiz are finishing the survey.

The conversion rate between the first and last question is 54%.

$$\frac{\text{First question response} * 100}{\text{Last question responses}}$$

Query code

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

Query output

question	responses
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. Project Task:

- **Which question(s) of the quiz have a lower completion rates?**
- **What do you think is the reason?**

3.1 Description of the task

Using a spreadsheet program like Excel or Google Sheets, calculate the percentage of users who answer each question:

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

What do you think is the reason?

3.2 Questions completion rate funnel spreadsheet

Question	Responses	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%

The above table was created with Excel and saved under the file name:
questions_completion_rate.xlsx

3.2 Questions completion rate funnel spreadsheet analysis

- Which question(s) of the quiz have lower completion rates?

Question 5 “When was your last eye exam?” has the lowest completion rate at 75%, followed by Question 3 “Which shapes do you like?” at 80%.

- What do you think is the reason?

If I may elaborate, Question 5 has a low completion rate, probably because most people do not remember the date of their last eye exam and don't want to take the time to look it up. Additionally, it is likely that they do not feel comfortable giving an estimated answer to the question or selecting the “I'm not sure. Let's skip it” choice.

Another possibility is that some customers intend to answer the question but get sidetracked and never finish the survey.

About Question 3, there is a chance that some customers like more than one shape of glasses frame and are unsure which shape will fit them the best. It is possible that they do not realize that the survey quiz gives the option to choose more than one shape, or they do not feel comfortable selecting the “no preference choice”.

4. Project Task:

Warby Parker's purchase funnel

4.1 Description of the task

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

Examine the first five rows of each table

What are the column names?

4.2 What are the column names?

Examine the first five rows of each table

- The database schema lists the columns, for each table, the column name, the column data type and numbers of rows in the table.

Database Schema		
home_try_on		750 rows
user_id	TEXT	
number_of_pairs	TEXT	
address	TEXT	
purchase		495 rows
user_id	TEXT	
product_id	INTEGER	
style	TEXT	
model_name	TEXT	
color	TEXT	
price	INTEGER	
survey		1986 rows
question	TEXT	
user_id	TEXT	
response	TEXT	
quiz		1000 rows
user_id	TEXT	
style	TEXT	
fit	TEXT	
shape	TEXT	
color	TEXT	

- The database schema shows that the user_id is the data, the key, that can be used to join the tables across the schema.
- The purchase table and the quiz table share some of the same data schema, (column names). The purchase table has an extra column, product_id, the table primary key, the user_id is a foreign key.

Query code

```
SELECT *
FROM quiz
LIMIT 5;

SELECT *
FROM home_try_on
LIMIT 5;

SELECT *
FROM purchase
LIMIT 5;
```

Query output

user_id	style	fit	shape	color	
4e8118dc-bb3d-49bf-85fc-cca8d83232ac	Women's Styles	Medium	Rectangular	Tortoise	
291f1cca-e507-480e-b063-002b14906468	Women's Styles	Narrow	Round	Black	
75122300-0736-4087-b6d8-c0c5373a1a04	Women's Styles	Wide	Rectangular	Two-Tone	
75bc6ebd-40cd-4e1d-a301-27dd93b12e2	Women's Styles	Narrow	Square	Two-Tone	
ce965c4d-7a2b-4db6-9847-601747f7812	Women's Styles	Wide	Rectangular	Black	
user_id	number_of_pairs	address			
d8add087-3217-4429-9a01-d56d68111da7	5 pairs	145 New York 9a			
f52b07c8-abe4-4f4e-9d39-ba9fc9a184cc	5 pairs	383 Madison Ave			
8ba0d2d5-1a31-403e-9f65-795408477f9	5 pairs	287 Pell St			
4e71850e-8b0bf-4e6b-accf-49a7bb46c586	3 pairs	347 Madison Square N			
3bc8f97f-2336-4dab-bd86-e391609dab97	5 pairs	182 Cornelia St			
user_id	product_id	style	model_name	color	price
00a9dd17-36c8-430c-9d76-df49d4137dcf	8	Women's Styles	Lucy	Jet Black	150
00e15fe0-c66f-4818-9c63-3422211baa97	7	Women's Styles	Lucy	Elderflower Crystal	150
01750687-aba1-4b8d-8b7b-f4426e71b8ca	4	Men's Styles	Dawes	Jet Black	150
0176bf63-9c51-4b1c-b593-87eda3c5c4cb	10	Women's Styles	Eugene Narrow	Rosewood Tortoise	95
01fd1106-ff73c-4d3f-a036-2f3e2ab1ce06	8	Women's Styles	Lucy	Jet Black	150

4.3 home_try_on table data exploration

- The following query of the home_try_on table output the number of users that got 5 pairs to try, the number of users that got 3 pairs to try on and the total number of user that got pairs.

The task description said that 50% of user got 5 pairs and the another 50% got 3 pairs.

The data from the home_try_on table furnish for this exercise has a discrepancy between the number of users that got 5 pairs and the number of users that got 3 pairs.

Number of user that got 5 pairs try on is 371.

Number of user that got 3 pairs try on is 379.

With a total of 750.

Query code

```
SELECT
  -- Number of customers that received 5 pairs try-on
  COUNT(DISTINCT CASE
    WHEN number_of_pairs = '5 pairs' THEN user_id
  END) AS 'number_of_5_pairs_try_on',
  -- Number of customers that received 3 pairs try-on
  COUNT(DISTINCT CASE
    WHEN number_of_pairs = '3 pairs' THEN user_id
  END) AS 'number_of_3_pairs_try_on',
  -- Total number of customers that received pairs try-on
  COUNT (*) AS 'total_number_of_pairs_try_on'
FROM home_try_on;
```

Query output

number_of_5_pairs_try_on	number_of_3_pairs_try_on	total_number_of_pairs_try_on
371	379	750

4.4 Percentage of users with 5 and 3 pairs try on

- The following query of the home_try_on table output the number of users that received 5 pairs to try, the number of users that received 3 pairs to try as percentages. (49.47% of users received 5 pairs and 50.53% got 3 pairs.)

Query code

```
WITH pairs_users_totals AS (  
  SELECT  
    -- Number of customers that received 5 pairs try-on  
    COUNT(DISTINCT CASE  
      WHEN number_of_pairs = '5 pairs' THEN user_id  
    END) AS 'number_of_5_pairs_try_on',  
    -- Number of customers that received 3 pairs try-on  
    COUNT(DISTINCT CASE  
      WHEN number_of_pairs = '3 pairs' THEN user_id  
    END) AS 'number_of_3_pairs_try_on',  
    -- Total number of customers that received pairs try-on  
    COUNT (*) AS 'total_number_of_pairs_try_on'  
  FROM home_try_on)  
-- Decimal percentages computations  
SELECT ROUND(1.0 * number_of_5_pairs_try_on * 100 / total_number_of_pairs_try_on, 2) AS  
'%_of_users_that_got_5_pairs',  
       ROUND(1.0 * number_of_3_pairs_try_on * 100 / total_number_of_pairs_try_on, 2) AS  
'%_users_that_got_3_pairs'  
FROM pairs_users_totals;
```

Query output

%_of_users_that_got_5_pairs	%_users_that_got_3_pairs
49.47	50.53

5. Project Task: Create a new table

5.1 Description of the task

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

Each row will represent 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'.
- number_of_pairs comes from home_try_on table
- If the user has any entries in is_purchase, then is_purchase will be 'True'.

Use a LEFT JOIN to combine the three tables, starting with the top of the funnel (quiz) and ending with the bottom of the funnel (purchase).

Select only the first 10 rows from this table.

5.2 The Table

- The query outputs the user ids of customers who registered for a home frame try on, but it also outputs the user ids of users that did not, resulting, for those user ids, of a NULL output in the number_of_pairs column and a False output in the columns is_home_try_on and is_purchase.
 - I debate the usefulness of displaying entire rows, where, with the exception the customer user id (primary key), the second column with a NULL output will have the consequence of a NULL output for all remaining columns.
- Outputting a table using an INNER JOIN clause to join the tables quiz and home_try_on will eliminate entire rows with only NULL outputs, and it seems to be a more useful data output to display, the LEFT JOIN clause should still be used to join the reminding tables.

Query output

user_id	is_home_try_on	number_of_pairs	is_purchase
4e8118dc-bb3d-49bf-85fc-cca8d83232ac	True	3	False
291f1cca-e507-48be-b063-002b14906468	True	3	True
75122300-0736-4087-b6d8-c0c5373a1a04	False	NULL	False
75bc6ebd-40cd-4e1d-a301-27ddd93b12e2	True	5	False
ce965c4d-7a2b-4db6-9847-601747fa7812	True	3	True
28867d12-27a6-4e6a-a5fb-8bb5440117ae	True	5	True
5a7a7e13-fbcf-46e4-9093-79799649d6c5	False	NULL	False
0143cb8b-bb81-4916-9750-ce956c9f9bd9	False	NULL	False
a4ccc1b3-cbb6-449c-b7a5-03af42c97433	True	5	False
b1dded76-cd60-4222-82cb-f6d464104298	True	3	False

```
SELECT DISTINCT q.user_id,  
    -- try-on true or false  
    CASE  
        WHEN h.user_id IS NOT NULL THEN 'True'  
        ELSE 'False'  
    END AS 'is_home_try_on',  
    -- 5 pairs, 3 pairs or NULL  
    CASE  
        WHEN h.number_of_pairs = '5 pairs' THEN '5'  
        WHEN h.number_of_pairs = '3 pairs' THEN '3'  
        ELSE 'NULL'  
    END AS 'number_of_pairs',  
    -- purchase true or false  
    CASE  
        WHEN p.user_id IS NOT NULL THEN 'True'  
        ELSE 'False'  
    END 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;
```

6. Project Task: Analyze data

6.1 Description of the task

Once we have the data in this format, we can analyze it in several ways:

We can calculate overall conversion rates by aggregating across all rows.

We can compare conversion from quiz→home_try_on and home_try_on→purchase.

We can calculate the difference in purchase rates between customers who had 3 number_of_pairs with ones who had 5.

And more!

We can also use the original tables to calculate things like:

The most common results of the style quiz.

The most common types of purchase made.

And more!

What are some actionable insights for Warby Parker?

6.2 Numbers query of the Warby Parker's purchase funnel

- Warby Parker's purchase funnel is:

Take the Style Quiz → Home Try-On → Purchase the Perfect Pair of Glasses

- The query outputs the numbers for each step of the funnel, splitting the Home Try-on step into 3 categories, total number of Home Try-on, total number of Home Try-On with 5 pairs and total number of Home Try-On with 3 pairs.
- The query outputs the total number of purchases into 3 categories, the total number of purchases, the number of Home Try-On 5 pairs purchases and the number of Home Try-On 3 pairs purchases.
- A quick look at the query results, shows that the number of purchases from customers who received 5 pairs to try-on is significantly higher than the customers that received 3 pairs to try-on.

294 purchase from customers who received 5 pairs try-on

201 purchase from customers who received 3 pairs try-on

Query output

number_of_quiz	total_number_of_pairs_try_on	number_of_purchases	number_of_5_pairs_try_on	number_of_3_pairs_try_on	number_of_purchases_with_5_pairs_try_on	number_of_purchases_with_3_pairs_try_on
1000	750	495	371	379	294	201

```

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 p.user_id = q.user_id)
SELECT COUNT(*) AS 'number_of_quiz',
    SUM(is_home_try_on) AS 'total_number_of_pairs_try_on',
    -- Total purchases
    SUM(is_purchase) AS 'number_of_purchases',
    -- Number of 5 pairs try-on
    COUNT(DISTINCT CASE
        WHEN number_of_pairs = '5 pairs' THEN user_id
    END) AS 'number_of_5_pairs_try_on',
    -- Number of 3 pairs try-on
    COUNT(DISTINCT CASE
        WHEN number_of_pairs = '3 pairs' THEN user_id
    END) AS 'number_of_3_pairs_try_on',
    -- Number of purchase with 5 pairs try-on
    COUNT(DISTINCT CASE
        WHEN number_of_pairs = '5 pairs' AND is_purchase = 1 THEN user_id
    END) AS 'number_of_purchases_with_5_pairs_try_on',
    -- Number of purchase with 3 pairs try-on
    COUNT(DISTINCT CASE
        WHEN number_of_pairs = '3 pairs' AND is_purchase = 1 THEN user_id
    END) AS 'number_of_purchases_with_3_pairs_try_on'
FROM funnel;

```

6.3 Funnel overall conversion rate

- Warby Parker's purchase funnel is:
Take the Style Quiz → Home Try-On → Purchase the Perfect Pair of Glasses
- Style Quiz → Home Try-On
From 1000 quizzes 75% of the customers registered for the Home Try-on glasses frame step.
- Home Try-On → Purchase the Perfect Pair of Glasses
66% of the registered Home Try-on customers purchased glasses frames.

The data from A/B test giving 50% of the users will get 5 pairs to try on and the another 50% will get 3 pairs to try on, shows that there is a significant difference of purchase outcomes between the customers who got 5 pairs and those who got 3 pairs.

Note: The task description said that 50% of users got 5 pairs and the another 50% got 3 pairs, but the data from the home_try_on table furnished for this exercise has a discrepancy between the number of users that got 5 pairs and the number of users that got 3 pairs.

Number of user that got 5 pairs to try on is 371, number of user that got 3 pairs to try on is 379, with a total of 750. The code query takes account for the discrepancy between the number of users that got 5 pairs and the number of users that got 3 pairs.

- The 5 pairs Home Try-on test has a purchase conversion rate of 79.25%, compared to 3 pairs Home Try-on test with a purchase conversion rate of 53.03% . There is a difference of 26.02% between the two. By giving 5 pairs Home Try-on to all their costumers instead of 3 pairs, Warby Parker may increase the overall conversion rate from the Home Try-on step to Purchase the Perfect Pair of Glasses by 26.02%.

Query output

number_of_quiz	%_quiz_to_home_try_on	%_home_try_on_to_purchase	%_5_pairs_try_on_to_purchase	%_3_pairs_try_on_to_purchase
1000	75.0	66.0	79.25	53.03

```

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 p.user_id = q.user_id)
SELECT COUNT(*) AS 'number_of_quiz',
    -- Conversion rate in percentages of quiz to home try-on and home try-on to purchase
    -- Multiplying by 1.0 will output a decimal number
    ROUND(1.0 * SUM(is_home_try_on) * 100 / COUNT(*), 2) AS '%quiz_to_home_try_on',
    ROUND(1.0 * SUM(is_purchase) * 100 / SUM(is_home_try_on), 2) AS '%home_try_on_to_purchase',
    -- Conversion rate in percentages of 5 pairs try-on to purchase
    ROUND(1.0 * COUNT(DISTINCT CASE -- Number of purchase by customers that got 5 pairs
        WHEN number_of_pairs = '5 pairs' AND is_purchase = 1 THEN user_id
    END) * 100 / COUNT(DISTINCT CASE -- Number of customers that got 5 pairs
        WHEN number_of_pairs = '5 pairs' THEN user_id
    END), 2) AS '%5_pairs_try_on_to_purchase',
    -- Conversion rate in percentages of 3 pairs try-on to purchase
    ROUND(1.0 * COUNT(DISTINCT CASE -- Number of purchase by customers that got 3 pairs
        WHEN number_of_pairs = '3 pairs' AND is_purchase = 1 THEN user_id
    END) * 100 / COUNT(DISTINCT CASE -- Number of customers that got 3 pairs
        WHEN number_of_pairs = '3 pairs' THEN user_id
    END), 2) AS '%3_pairs_try_on_to_purchase'

FROM funnel;

```

6.4 Conversion rates, Quiz → Purchase

- Funnel conversion rates from Style Quiz → Home Try-On → Purchase the Perfect Pair of Glasses

- Style Quiz → Purchase the Perfect Pair of Glasses

From 1000 quizzes 49.5% of the customers purchased a glasses frame.

The data from A/B test giving 50% of the users will get 5 pairs to try on and the another 50% will get 3 pairs to try on, shows that there is a significant difference of purchase outcomes between the customers who got 5 pairs and those who got 3 pairs.

Note: The task description said that 50% of users got 5 pairs and the another 50% got 3 pairs, but the data from the home_try_on table furnished for this exercise has a discrepancy between the number of users that got 5 pairs and the number of users that got 3 pairs.

Number of user that got 5 pairs to try on is 371, number of user that got 3 pairs to try on is 379, with a total of 750. The code query takes account for the discrepancy between the number of users that got 5 pairs and the number of users that got 3 pairs.

- Quiz → 5 pair Purchase the Perfect Pair of Glasses

The purchase conversion rate from the 1000 quizzes to Purchase under the test A/B giving 5 pairs to try-on is 59.43%.

Quiz → 3 pair Purchase the Perfect Pair of Glasses

The purchase conversion rate from the 1000 quizzes to Purchase under the test A/B giving 3 pairs to try-on is 39.79%

There is a difference of 19.65% between the two tests. By giving 5 pairs Home Try-on to all his costumers instead of 3 pairs,

Warby Parker may increase the overall conversion rate from the Quiz step to Purchase by 19.65 %.

Query output

number_of_quiz	%_quiz_to_purchase	%_quiz_to_purchase_5_pairs_try_on	%_quiz_to_purchase_3_pairs_try_on
1000	49.5	59.43	39.78

Query code

```
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 p.user_id = q.user_id)  
SELECT COUNT(*) AS 'number_of_quiz',  
  -- Conversion rate in percentages of quiz to purchase  
  -- Multiplying by 1.0 will output a decimal number  
  ROUND(1.0 * SUM(is_purchase) * 100 / COUNT(*), 2) AS '%quiz_to_purchase',  
  -- Conversion rate in percentages of quiz to purchase for customers that got 5 pairs try-on  
  ROUND(1.0 * COUNT(DISTINCT CASE -- Number of purchase by customers that got 5 pairs  
    WHEN number_of_pairs = '5 pairs' AND is_purchase = 1 THEN user_id  
  END) * 100 / (COUNT(*) / (100 / ROUND(1.0 * COUNT(DISTINCT CASE -- Number of customers that got 5 pairs  
    WHEN number_of_pairs = '5 pairs' THEN user_id  
  END) * 100 / SUM(is_home_try_on), 2))), 2) AS '%quiz_to_purchase_5_pairs_try_on',  
  -- Conversion rate in percentages of quiz to purchase for customers that got 3 pairs try-on  
  ROUND(1.0 * COUNT(DISTINCT CASE -- Number of purchase by customers that got 5 pairs  
    WHEN number_of_pairs = '3 pairs' AND is_purchase = 1 THEN user_id  
  END) * 100 / (COUNT(*) / (100 / ROUND(1.0 * COUNT(DISTINCT CASE -- Number of customers that got 3 pairs  
    WHEN number_of_pairs = '3 pairs' THEN user_id  
  END) * 100 / SUM(is_home_try_on), 2))), 2) AS '%quiz_to_purchase_3_pairs_try_on'  
FROM funnel;
```

6.5 The most common results of the style quiz

- The most common results of the style quiz are:

For men: Narrow Rectangular Tortoise glasses frame with 23 results

For women: Narrow Rectangular Black glasses frame with 20 results
 Narrow Rectangular Tortoise glasses frame with 20 results

Query code

```
SELECT COUNT(DISTINCT user_id) AS 'number_of_common_types',  
       style,  
       fit,  
       shape,  
       color  
FROM quiz  
GROUP BY 2, 3, 4, 5  
ORDER by 1 DESC  
LIMIT 3;
```

Query output

number_of_common_types	style	fit	shape	color
23	Men's Styles	Narrow	Rectangular	Tortoise
20	Women's Styles	Narrow	Rectangular	Black
20	Women's Styles	Narrow	Rectangular	Tortoise

6.6 Conversion rates for common styles

Results conversion rate from the quiz table:

- From 1000 quizzes, 46.9% of the customers choose the Women's Styles and 43.2% choose the Men's Styles.
- From the total of costumers that choose the Men's Styles
5.32% also choose the style Narrow Rectangular Tortoise.
- From the total of costumers that choose the Women's Styles
4.26% also choose the style Narrow Rectangular Black,
4.26% also choose the style Narrow Rectangular Tortoise.

Query output

total_number_of_quiz	%_style_women	%_style_men	%_men_narrow_rec_tortoise	%_women_narrow_rec_black	%_women_narrow_rec_tortoise
1000	46.9	43.2	5.32	4.26	4.26

Query code

```

WITH number_of_common_results AS (
    SELECT COUNT(DISTINCT user_id) AS 'total_number_of_quiz',
           COUNT(DISTINCT CASE -- Number of Women's styles
                           WHEN style = 'Women''s Styles' THEN user_id
                           END) AS 'num_style_women',
           COUNT(DISTINCT CASE -- Number of Men's styles
                           WHEN style = 'Men''s Styles' THEN user_id
                           END) AS 'num_style_men',
           COUNT(DISTINCT CASE -- Number of Men's styles Narrow Rectangular Tortoise
                           WHEN style = 'Men''s Styles'
                               AND fit = 'Narrow'
                               AND shape = 'Rectangular'
                               AND color = 'Tortoise'
                           THEN user_id
                           END) AS 'num_style_men_narrow_rec_tortoise',
           COUNT(DISTINCT CASE -- Number of Women's styles Narrow Rectangular Black
                           WHEN style = 'Women''s Styles'
                               AND fit = 'Narrow'
                               AND shape = 'Rectangular'
                               AND color = 'Black'
                           THEN user_id
                           END) AS 'num_style_women_narrow_rec_black',
           COUNT(DISTINCT CASE -- Number of Women's styles Narrow Rectangular Tortoise
                           WHEN style = 'Women''s Styles'
                               AND fit = 'Narrow'
                               AND shape = 'Rectangular'
                               AND color = 'Tortoise'
                           THEN user_id
                           END) AS 'num_style_women_narrow_rec_tortoise'
    FROM quiz)
SELECT total_number_of_quiz,
       -- Conversion rates in percentages
       -- Multiplying by 1.0 will output a decimal number
       ROUND(1.0 * num_style_women * 100 / total_number_of_quiz, 2) AS '%_style_women',
       ROUND(1.0 * num_style_men * 100 / total_number_of_quiz, 2) AS '%_style_men',
       ROUND(1.0 * num_style_men_narrow_rec_tortoise * 100 / num_style_men, 2) AS '%_men_choose_style_narrow_rec_tortoise',
       ROUND(1.0 * num_style_women_narrow_rec_black * 100 / num_style_women, 2) AS '%_women_choose_style_narrow_rec_black',
       ROUND(1.0 * num_style_women_narrow_rec_tortoise * 100 / num_style_women, 2) AS '%_women_choose_style_narrow_rec_tortoise'
FROM number_of_common_results;

```

6.7 The most common types of purchase made

The most common type of purchases made are:

- For men:
Dawes driftwood fade glasses frames with 63 purchases
- For women:
Eugene Narrow rosewood tortoise glasses frames with 62 purchases

Query code

```
SELECT COUNT(DISTINCT user_id) AS 'number_of_purchases',  
       product_id,  
       style,  
       model_name,  
       color,  
       price  
FROM purchase  
GROUP BY 3, 4, 5, 6  
ORDER by 1 DESC  
LIMIT 2;
```

Query output

number_of_purchases	product_id	style	model_name	color	price
63	3	Men's Styles	Dawes	Driftwood Fade	150
62	10	Women's Styles	Eugene Narrow	Rosewood Tortoise	95

6.8 Conversion rates for common purchases

Results conversion rate from the purchase table:

- From 495 purchases 50.91% of the customers purchased a Women's Styles glasses frame and 49.09% purchased a Men's Style.
- From the total of costumers that purchased a Men's Styles,
25.93% choose to purchases the Dawes Driftwood Fade glasses frame, with a product id of 3.
- From the total of costumers that purchased a Women's Styles,
24.6% choose to purchases the Eugene Narrow Rosewood Tortoise glasses frame, with a product id of 10.

Query output

total_number_of_purchase	%_style_women_purchases	%_style_men_purchases	%_men_product_id_3_purchases	%_women_product_id_10_purchases
495	50.91	49.09	25.93	24.6

```

WITH number_of_common_purchases AS (
    SELECT COUNT(DISTINCT user_id) AS 'total_number_of_purchase',
           COUNT(DISTINCT CASE -- Number of Women's styles purchases
                        WHEN style = 'Women''s Styles' THEN user_id
                    END) AS 'num_style_women_purchases',
           COUNT(DISTINCT CASE -- Number of Men's styles purchases
                        WHEN style = 'Men''s Styles' THEN user_id
                    END) AS 'num_style_men_purchases',
           COUNT(DISTINCT CASE -- Number of Men's styles Dawes Driftwood Fade purchases
                        WHEN product_id = 3
                        AND style = 'Men''s Styles'
                        AND model_name = 'Dawes'
                        AND color = 'Driftwood Fade'
                        AND price = 150
                        THEN user_id
                    END) AS 'num_men_product_id_3_purchases',
           COUNT(DISTINCT CASE -- Number of Women's styles Eugene Narrow Rosewood Tortoise purchases
                        WHEN product_id = 10
                        AND style = 'Women''s Styles'
                        AND model_name = 'Eugene Narrow'
                        AND color = 'Rosewood Tortoise'
                        AND price = 95
                        THEN user_id
                    END) AS 'num_women_product_id_10_purchases'
    FROM purchase)
SELECT total_number_of_purchase,
       -- Conversion rates in percentages
       -- Multiplying by 1.0 will output a decimal number
       ROUND(1.0 * num_style_women_purchases * 100 / total_number_of_purchase, 2) AS '%style_women_purchases',
       ROUND(1.0 * num_style_men_purchases * 100 / total_number_of_purchase, 2) AS '%style_men_purchases',
       ROUND(1.0 * num_men_product_id_3_purchases * 100 / num_style_men_purchases, 2) AS '%men_product_id_3_purchases',
       ROUND(1.0 * num_women_product_id_10_purchases * 100 / num_style_women_purchases, 2) AS '%women_product_id_10_purchases'
FROM number_of_common_purchases;

```

6.9.1 What are some actionable insights for Warby Parker?

- The query of the survey table shows 54% of users starting the quiz are finishing the survey.

Question 5 “When was your last eye exam?” has the lowest completion rate at 75%

Question 3 “Which shapes do you like?” follows question 5 with a completion rate at 80%

Improving the completion of the questions 5 and 3 will also improve the number of the customers finishing the survey.

6.9.2 What are some actionable insights for Warby Parker?

Warby Parker's purchase funnel is Take the Style Quiz → Home Try-On → Purchase the Perfect Pair of Glasses

- Style Quiz → Home Try-On
From 1000 quizzes 75% of the customers registered for the Home Try-on glasses frame step.
- Home Try-On → Purchase the Perfect Pair of Glasses

66% of the registered Home Try-on customers purchased glasses frame.
The 5 pairs Home Try-on test has a purchase conversion rate of 79.25%,
compared to 3 pairs Home Try-on test with a purchase conversion rate of 53.03% .

There is a difference of 26.02% between the two, by giving 5 pairs Home Try-on to all their costumers instead of 3 pairs, Warby Parker may increase the overall conversion rate from the Home Try-on step to Purchase by 26.02%.

6.9.3 What are some actionable insights for Warby Parker?

Warby Parker's purchase funnel is Take the Style Quiz → Home Try-On → Purchase the Perfect Pair of Glasses

- Style Quiz → Purchase the Perfect Pair of Glasses

From 1000 quizzes 49.5% of the customers purchase a glasses frame.

The purchase conversion rate from the 1000 quizzes to Purchase under the test A/B giving 5 pairs to try-on is 59.43%.

The purchase conversion rate from the 1000 quizzes to Purchase under the test A/B giving 3 pairs to try-on is 39.79%

There is a difference of 19.65% between the two test, by giving 5 pairs Home Try-on to all their costumers instead of 3 pairs, Warby Parker may increase the overall conversion rate from the Quiz step to Purchase by 19.65%.

6.9.4 What are some actionable insights for Warby Parker?

Results conversion rate from the quiz table:

- From 1000 quizzes 46.9% of the customers choose the Women's Styles and 43.2% choose the Men's Styles.
- From the total of costumers that choose the Men's Styles
 - 5.32% also choose the style Narrow Rectangular Tortoise.
- From the total of costumers that choose the Women's Styles
 - 4.26% also choose the style Narrow Rectangular Black,
 - 4.26% also choose the style Narrow Rectangular Tortoise.

The Narrow Rectangular Tortoise are the most popular choice of frames for women and men, offering more variants of the color Tortoise, will improve the website glasses frames suggestions to the customers during the Home Try-on frame selecting step.

6.9.5 What are some actionable insights for Warby Parker?

Results conversion rate from the purchase table:

- The most popular frame for women is Eugene Narrow Rosewood Tortoise glasses frame, with a product id of 10, and for men is Dawes Driftwood Fade glasses frame, with a product id of 3.
- From 495 purchases 50.91% of the customers purchased a Women's Styles glasses frame and 49.09% a Men's Styles.
- From the total of costumers that purchased a Men's Styles,
25.93% choose to purchases the Dawes Driftwood Fade glasses frame, with a product id of 3.
- From the total of costumers that purchased a Women's Styles,
24.6% choose to purchases the Eugene Narrow Rosewood Tortoise glasses frame, with a product id of 10.

Offering more variants Dawes Driftwood Fade glasses frame and Eugene Narrow Rosewood Tortoise glasses, will possibly improve the conversion rate from Home Try-on to Purchase the Perfect Pair of Glasses.