Usage Funnels with Warby Parker

Learn SQL From Scratch

Tom Maentz

codecademy

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* All *italicized questions* are required for the Capstone Project

Introduction to 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.

This project is a collaboration with Warby Parker's Data Science team (thank you!) and uses fictional data.

WARBY PARKER

eyewear

Database Schema

In this Capstone Project, I analyzed two different Warby Parker marketing funnels and calculated conversion rates. Here are the funnels and tables:

Style Quiz Funnel

- “survey”

Home Try-On Funnel

- “quiz”
- “home_try_on”
- “purchase”

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 Style Quiz Funnel

To help users find their perfect frame, Warby Parker has a Style Quiz. The users' responses are stored in a table called "survey".

What columns does the table have?
question, user_id, response

What is the number of responses for each question?
500, 475, 380, 361, 270

```sql
-- Shows what columns the table has
SELECT *
FROM survey
LIMIT 10;

-- Shows the number of responses for each question
SELECT question,
  COUNT (DISTINCT user_id) AS '# of responses'
FROM survey
GROUP BY 1;
```

question	# of 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

The Style Quiz Funnel (Cont.)

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Which questions of the quiz have lower completion rates (%)?

- Question 3 at 80%
- Question 5 at ~75%

What do you think is the reason?

The Completion Rate shows us where users “gave up” on the quiz. Therefore, I rated each question 1-10 based on difficulty, leading to a hypothesis for why questions 3 & 5 had the lowest completion rate. (see next slide)

Question	Responses	Completion Rate
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%

Formula: Completion Rate (%) = (# of responses for current question / # of responses for previous question) * 100

Question	Difficulty Rating
1. What are you looking for?	1
2. What's your fit?	3
3. Which shapes do you like?	7
4. Which colors do you like?	7
5. When was your last eye exam?	9

The Style Quiz Funnel (Cont.)

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Question	Difficulty Rating	Completion Rate
1. What are you looking for?	1	100%
2. What's your fit?	3	95%
3. Which shapes do you like?	7	80%
4. Which colors do you like?	7	95%
5. When was your last eye exam?	9	75%

Proposed Testing:

- Switch 3 & 4 to see if interchangeable theory is correct

- Switch up the order of questions and see if fatigue plays a large role, especially for question 5

What do you think is the reason?

Questions 1 and 2 are easy. The questions ask for self-evident, personal information. (view Style Quiz)

Questions 3 and 4 are tougher. These questions ask for preferencial information, giving the user a selection of colors and shapes to choose from.

I believe questions 3 and 4 are interchangable, switching them would lead to similar results. It just matters which question is asked *first*.

Question 5 is the hardest. The question asks for information that one may not remember or have on hand. It is also the last question, fatigue may play a factor as well.

Home Try-On Funnel

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

* Each stage has its own data table (“quiz”, “home_try_on”, “purchase”)

Home Try-On stage, 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

What are the column names?

“quiz” = user_id, style, fit, shape, color

“home_try_on” = user_id, number_of_pairs, address

“purchase” = user_id, product_id, style, model_name, color, price

```sql
SELECT *
FROM quiz
LIMIT 5;

SELECT *
FROM home_try_on
LIMIT 5;

SELECT *
FROM purchase
LIMIT 5;
```

Home Try-On Funnel (Cont.)

Can you create the following table?

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

The objective of this task is to create a table which illustrates the Home Try-On Funnel and the A/B test data.

I used LEFT JOIN to create the table to the right.

Note: We can consult the Style Quiz Funnel to see where users fell off prior to the home try-on stage.

0 = False
1 = True

Solution:

```sql
-- Uses LEFT JOIN to create unified table
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 AS 'q'
LEFT JOIN home_try_on AS 'h'
    ON q.user_id = h.user_id
LEFT JOIN purchase AS 'p'
    ON q.user_id = p.user_id
LIMIT 10;
```

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

A/B Test Results

Users receive either 3 pairs (control) or 5 pairs (variant) of sunglasses to try at home, *which method is more effective?*

Control group conversion rate: 53%
Variant group conversion rate: ~79%

Trying on **5 pairs** of sunglasses leads to more purchases.

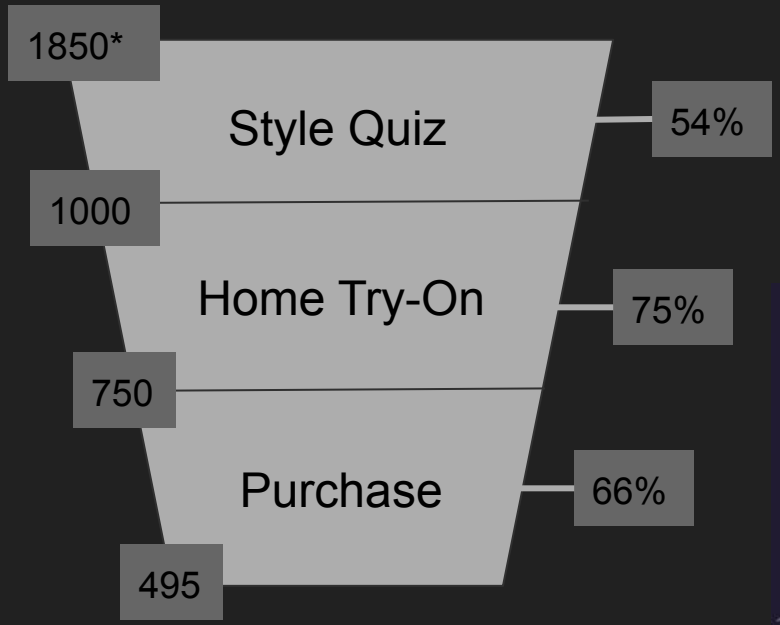
Formula: conversion rate = x_purchase / x_try_on

```sql
WITH warby 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 AS 'q'
  LEFT JOIN home_try_on AS 'h'
    ON q.user_id = h.user_id
  LEFT JOIN purchase AS 'p'
    ON q.user_id = p.user_id)
SELECT COUNT(CASE
               WHEN number_of_pairs = '3 pairs' THEN number_of_pairs
             END) AS 'control_try_on',
       COUNT(CASE
               WHEN number_of_pairs = '3 pairs'
                 AND is_purchase = 1 THEN number_of_pairs
             END) AS 'control_purchase',
       COUNT(CASE
               WHEN number_of_pairs = '5 pairs' THEN number_of_pairs
             END) AS 'variant_try_on',
       COUNT(CASE
               WHEN number_of_pairs = '5 pairs'
                 AND is_purchase = 1 THEN number_of_pairs
             END) AS 'variant_purchase'
FROM warby;
```

control_try_on	control_purchase	variant_try_on	variant_purchase
379	201	371	294

Actionable Insights

Overall Home Try-On Funnel



*Based on completion rate

The funnel to the right is built to give a full picture of the Warby Parker experience.

I used the completion rate from the Style Quiz to calculate the starting pool. Then used the following for the rest:

```sql
-- Counts users that completed the quiz
SELECT COUNT (DISTINCT user_id) AS 'quiz'
FROM quiz;

-- Counts users signed up to try at home
SELECT COUNT (Distinct user_id) AS 'try-on'
FROM home_try_on;

-- Counts users who purchased sunglasses
SELECT COUNT (Distinct user_id) AS 'purchase'
FROM purchase;
```

quiz
1000
try-on
750
purchase
495

Actionable Insights (Cont.)

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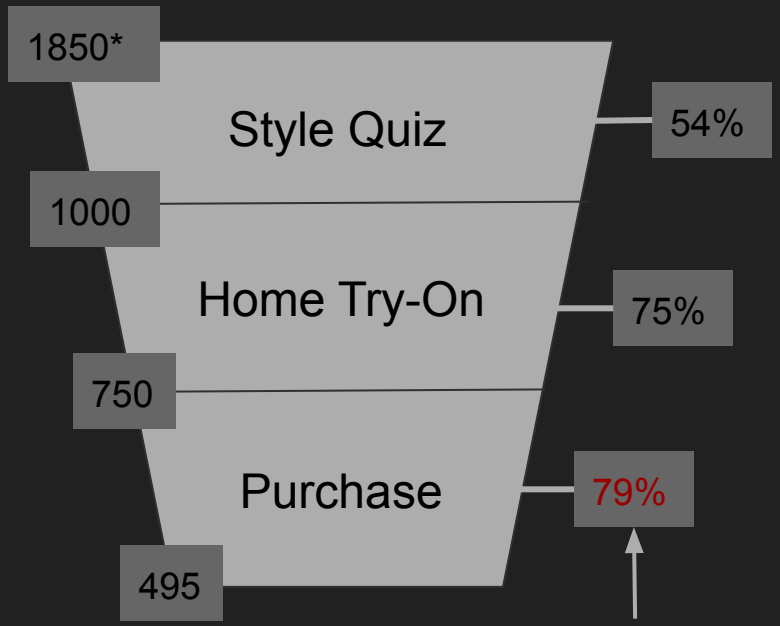
Overall Home Try-On Funnel



Overall conversion rate: 495 / 1850 = 27%

```sql
-- Calculation in SQL with rounding
SELECT ROUND((495.0 / 1850) * 100, 0) AS '%';
```

%
27.0

Insight #1: There are more purchases when 5 pairs are given for home try-on.

- Only send out sets of 5 pairs for the home try-on
- Updated conversion rate: 592 / 1850 = 32%

Actionable Insights (Cont.)

Overall conversion rate: 495 / 1850 = 26%
Updated conversion rate: 592 / 1850 = 32%

Insight #2: 75% of people who finish the survey participate in the home try-on stage.

- That's a high participation rate and "new" purchase rate

- Prioritize getting people through the Style Quiz (54%) by modifying questions or eliminating a question

- Test: Eliminate question 5. It would theoretically increase the Style Quiz completion rate to 72%.
(361 users complete question 4 / 500 initial users = .722)

The result would cause the funnel to look like this:
1850 -> 1332 -> 999 -> 789 789 / 1850 = 43%

Actionable Insights (Cont.)

Insight #3: There are only 10 product types purchased.

```sql
-- Shows highest product ID purchased
SELECT MAX(product_id) AS 'max product ID'
FROM purchase;

-- Shows apects of each product and purchase count
-- Double checks product_id is a fixed combination of aspects
SELECT product_id, style, model_name, color,
  price, COUNT (user_id) AS 'purchases'
FROM purchase
GROUP BY 1, 2, 3, 4, 5;
```

Only 5 Men's and 5 Women's products

max product ID
10

product_id	style	model_name	color	price	purchases
1	Men's Styles	Brady	Layered Tortoise Matte	95	52
2	Men's Styles	Brady	Sea Glass Gray	95	43
3	Men's Styles	Dawes	Driftwood Fade	150	63
4	Men's Styles	Dawes	Jet Black	150	44
5	Men's Styles	Monocle	Endangered Tortoise	50	41
6	Women's Styles	Olive	Pearled Tortoise	95	50
7	Women's Styles	Lucy	Elderflower Crystal	150	44
8	Women's Styles	Lucy	Jet Black	150	42
9	Women's Styles	Eugene Narrow	Rose Crystal	95	54
10	Women's Styles	Eugene Narrow	Rosewood Tortoise	95	62

If shipping 5 pairs of sunglasses to try on, then the quiz would only need a modified first question:

Would you like to try on our men's or women's sunglasses?

1850 -> 1387 -> 1096 1096 / 1850 = 59%
(assuming all would pick one or the other)

Actionable Insights (Cont.)

Insight #4: *The Dawes is the most profitable men's model. The Lucy is the most profitable women's model.

- Build a marketing campaign focused on promoting the two Dawes and two Lucy pairs

*Assuming all products cost the same to produce

```sql
SELECT product_id, style, model_name, color,
  price, COUNT (user_id) AS 'purchases',
  price * COUNT (user_id)  AS 'sales'
FROM purchase
GROUP BY 1
ORDER BY 7 DESC;
```

product_id	style	model_name	color	price	purchases	sales
3	Men's Styles	Dawes	Driftwood Fade	150	63	9450
4	Men's Styles	Dawes	Jet Black	150	44	6600
7	Women's Styles	Lucy	Elderflower Crystal	150	44	6600
8	Women's Styles	Lucy	Jet Black	150	42	6300
10	Women's Styles	Eugene Narrow	Rosewood Tortoise	95	62	5890
9	Women's Styles	Eugene Narrow	Rose Crystal	95	54	5130
1	Men's Styles	Brady	Layered Tortoise Matte	95	52	4940
6	Women's Styles	Olive	Pearled Tortoise	95	50	4750
2	Men's Styles	Brady	Sea Glass Gray	95	43	4085
5	Men's Styles	Monocle	Endangered Tortoise	50	41	2050

Actionable Insights (Cont.)

Insight #5: The $150 price point is more effective than the $95 price point.

- Look into increasing prices of glasses at the $95 price point

Insight #6: Men's has the most profitable model, it also has the least profitable model. (Exclude monocle)

- Research and develop new Brady model or new product offering for men

product_id	style	model_name	color	price	purchases	sales
3	Men's Styles	Dawes	Driftwood Fade	150	63	9450
4	Men's Styles	Dawes	Jet Black	150	44	6600
7	Women's Styles	Lucy	Elderflower Crystal	150	44	6600
8	Women's Styles	Lucy	Jet Black	150	42	6300
10	Women's Styles	Eugene Narrow	Rosewood Tortoise	95	62	5890
9	Women's Styles	Eugene Narrow	Rose Crystal	95	54	5130
1	Men's Styles	Brady	Layered Tortoise Matte	95	52	4940
6	Women's Styles	Olive	Pearled Tortoise	95	50	4750
2	Men's Styles	Brady	Sea Glass Gray	95	43	4085
5	Men's Styles	Monocle	Endangered Tortoise	50	41	2050

```sql
SELECT price * COUNT (user_id) AS 'Dawes sales $'
FROM purchase
WHERE model_name = 'Dawes';

SELECT price * COUNT (user_id) AS 'Brady sales $'
FROM purchase
WHERE model_name = 'Brady';
```

Dawes sales $
16050
Brady sales $
9025

→ Start with the Style Quiz Data!

Actionable Insights (Cont.)

Insight #7: Black, tortoise, medium-narrow, square, and rectangular are the most popular aspects of men's style.

- When coming up with new products, use these key aspects to create the next top-seller

color	# of selections
Black	121
Crystal	81
Neutral	44
Tortoise	128
Two-Tone	58

fit	# of selections
I'm not sure. Let's skip it.	37
Medium	142
Narrow	174
Wide	79

shape	# of selections
No Preference	44
Rectangular	176
Round	80
Square	132

Men's Style Quiz Results

```sql
-- The following three queries show preferences with Men's styles

SELECT color, COUNT (DISTINCT user_id)
    AS '# of selections'
FROM quiz
WHERE style = 'Men''s Styles'
GROUP BY 1;

SELECT fit, COUNT (DISTINCT user_id)
    AS '# of selections'
FROM quiz
WHERE style = 'Men''s Styles'
GROUP BY 1;

SELECT shape, COUNT (DISTINCT user_id)
    AS '# of selections'
FROM quiz
WHERE style = 'Men''s Styles'
GROUP BY 1;
```

Actionable Insights

Insight #1: There are more purchases when 5 pairs are given for home try-on.

Insight #2: 75% of people who finish the survey participate in the home try-on stage.

Insight #3: There are only 10 product types purchased.

Insight #4: The Dawes is the most profitable men's model. The Lucy is the most profitable women's model.

Insight #5: The $150 price point is more effective than the $95 price point.

Insight #6: Men's has the most profitable model, it also has the least profitable model.

Insight #7: Black, tortoise, medium-narrow, square, and rectangular are the most popular aspects of men's style.

Credits: