codecademy

Funnels with Warby Parker

Learn SQL from Scratch

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1. Quiz Funnel

1. Getting Familiar with Warby Parker

```
1  --Get column headings
2  SELECT *
3  FROM survey
4  LIMIT 10;
```

Query Results

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

1. Select all columns from the first 10 rows. What columns does the table have?
-Using the query above we can find the column headings for the Survey table
-There are 3 columns; question, user_id and responses.

1. Getting Familiar with Warby Parker

2. What is the number of responses for each question?

```sql
--2. Quiz Funnel- Number of users who answered each question
SELECT question,
  COUNT(DISTINCT user_id) AS 'No of Users'
FROM survey
GROUP BY question;
```

Query Results	
question	No of Users
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. Which question(s) of the quiz have a lower completion rates?

Question	No of Users	Percentage of Last Question	Overall Percentage
1. What are you looking for?	500	100%	100%
2. What's your fit?	475	95%	95%
3. Which shapes do you like?	380	80%	76%
4. Which colors do you like?	361	95%	72%
5. When was your last eye exam?	270	75%	54%

The question with the lowest completion rate was question 5, with only 75% of the users who answered question 4 going on to answer question 5. A reason for this could be that users believe this question to be more personal and do not feel confident in giving this information out. In addition Q5 has no relevance in helping to determine the correct frame so they may opt to ignore the question. Q3 also has a lower completion rate compare to Q1,2 & 4, this may be because the question and answers are vague and not specific enough to help select a shape for glasses. In terms of overall figures, nearly 50% of users who start the quiz do not end up finishing the quiz.

2. Home Try-On Funnel

2. What is the Quiz Funnel- Column Names

```sql
--4. Purchase Funnel- What are the column names of each table?
SELECT *
FROM quiz
LIMIT 5;

SELECT *
FROM home_try_on
LIMIT 5;

SELECT *
FROM purchase
LIMIT 5;
```

4. What are the column names?

- Quiz Table= user_id, style, fit, shape & color
- Home_Try_On table= user_id, number of pairs & address
- Purchase Table= user_id, product_id, style, model_name, color & price

Query Results

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

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

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

2. What is the Quiz Funnel- Joined Tables

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

```sql
--5. Purchase Funnel- Combined Table. Join on user_id.
SELECT Distinct q.user_id,
  hto.user_id IS NOT NULL as 'is_home_try_on',
  hto.number_of_pairs,
  p.user_id IS NOT NULL as 'is_purchase'
FROM quiz AS q
LEFT JOIN home_try_on AS hto
  ON q.user_id = hto.user_id
LEFT JOIN purchase AS p
  ON hto.user_id = p.user_id
LIMIT 10;
```

```sql
--5. Purchase Funnel- Combined Table. Join on user_id. Version 2
SELECT DISTINCT q.user_id,
CASE WHEN hto.user_id IS NOT NULL
  THEN 'True' ELSE 'False'
  END AS 'is_home_try_on',
hto.number_of_pairs,
CASE WHEN p.user_id IS NOT NULL
  THEN 'TRUE' ELSE 'FALSE'
  END AS 'is_purchase'
FROM quiz AS q
LEFT JOIN home_try_on AS hto
ON q.user_id = hto.user_id
LEFT JOIN purchase AS P
ON hto.user_id = p.user_id
LIMIT 10;
```

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

Second query is similar to the first, but CASE statement is used to display TRUE/FALSE to indicate if the value is not null or null. Used the first query to make it consistent with queries used in Q6 and to allow for easier aggregation.

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

6. Calculate overall conversion rates by aggregating across all rows

```sql
--Use select statement from Q5 to create a temporary table by using a WITH statement. The below query will calculate overall conversion rates.
WITH PFunnel As
  (SELECT Distinct q.user_id,
  hto.user_id IS NOT NULL as 'is_home_try_on',
  hto.number_of_pairs,
  p.user_id IS NOT NULL as 'is_purchase'
FROM quiz AS q
LEFT JOIN home_try_on AS hto
  ON q.user_id = hto.user_id
LEFT JOIN purchase AS p
  ON hto.user_id = p.user_id)
SELECT
  count(user_id) as 'Total Users',
  sum(is_home_try_on) as 'Home Try On Total',
  sum(is_purchase) as 'Purchase Total',
  1.0 * SUM(is_home_try_on) / COUNT(user_id) as '% of Users with Home Try On',
  1.0 * SUM(is_purchase) / SUM(is_home_try_on) as '% of Home Try on that Purchased'
from PFunnel;
```

- Looking at the Home Try-On funnel, the quiz starts with 1000 users, of which 750 (75%) were apart of the Home Try on testing.
- From the 750 home try on users 495 (66%) ended up making a purchase.

Query Results

Total Users	Home Try On Total	Purchase Total	% of Users with Home Try On	% of Home Try on that Purchased
1000	750	495	0.75	0.66

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

```sql
--The below query is a modified version of the above. This will show conversion rates broken down by the number of pairs that where tried on at home. This will help us see the results of the A/B test.
WITH PFunnel As
  (SELECT Distinct q.user_id,
  hto.user_id IS NOT NULL as 'is_home_try_on',
  hto.number_of_pairs,
  p.user_id IS NOT NULL as 'is_purchase'
FROM quiz AS q
LEFT JOIN home_try_on AS hto
  ON q.user_id = hto.user_id
LEFT JOIN purchase AS p
  ON hto.user_id = p.user_id)
SELECT
  number_of_pairs,
  count(user_id) as 'Total Users',
  sum(is_home_try_on) as 'Home Try On Total',
  sum(is_purchase) as 'Purchase Total',
  1.0 * SUM(is_purchase) / SUM(is_home_try_on) as '% of Home Try on that Purchased'
FROM PFunnel
GROUP BY number_of_pairs;
```

Query Results

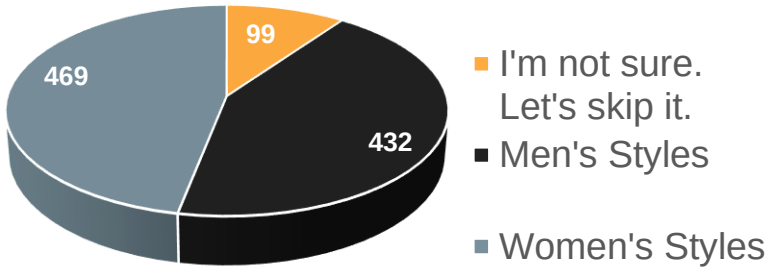
number_of_pairs	Total Users	Home Try On Total	Purchase Total	% of Home Try on that Purchased
Ø	250	0	0	Ø
3 pairs	379	379	201	0.530343007915567
5 pairs	371	371	294	0.792452830188679

6. Calculate conversion rates for people with Home Try-On

- 250 users with no home try on made no purchases.
- Looking at the A/B testing results, users with 5 pairs of glasses had a higher rate of purchases
- There were 379 users with 3 pairs of glasses to try on, of which 201 made a purchase, a conversion rate of 53%
- In comparison there were 371 users with 5 pairs, with 294 then going on to make a purchase giving a conversion rate of 79%
- From these results it's clear that giving people 5 pairs of glasses to try will result in more purchases

3. Home Try-On Funnel- Further Insights

```sql
--Query below used to get the number of responses fror every quiz answer combination
SELECT style,
  fit,
  shape,
  color,
  count (*)
FROM quiz
GROUP BY style, fit, shape,color
ORDER BY 5 desc;
```



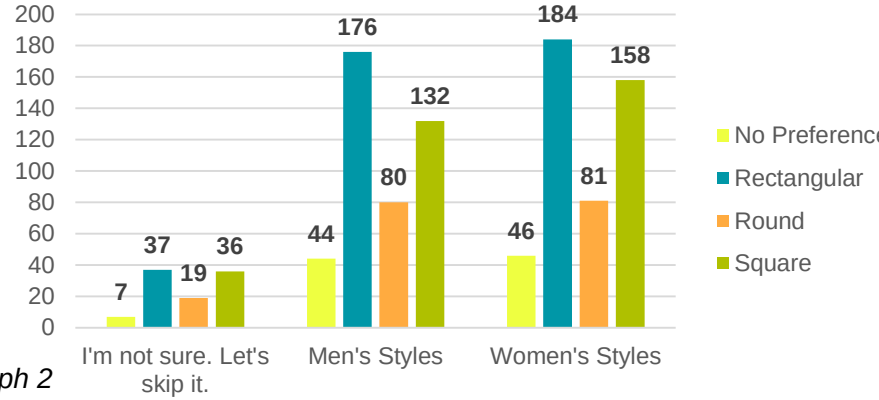
Graph 1

Query Results

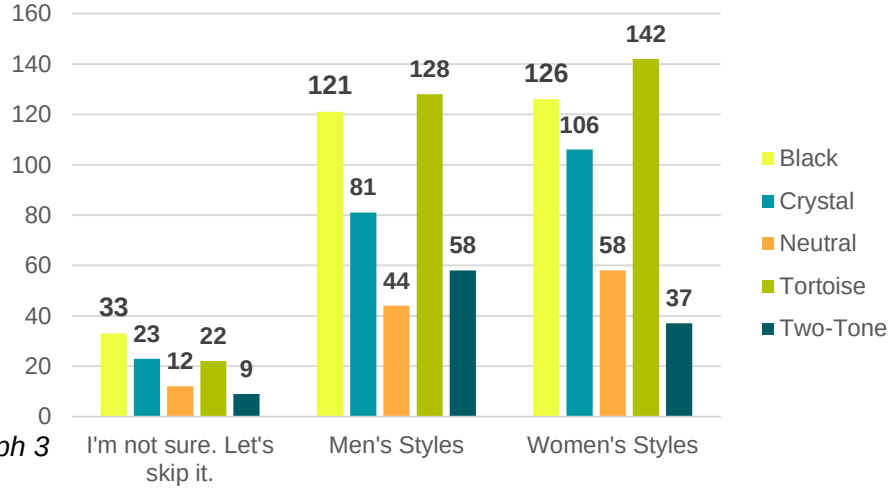
style	fit	shape	color	count (*)
Men's Styles	Narrow	Rectangular	Tortoise	23
Women's Styles	Narrow	Rectangular	Black	20
Women's Styles	Narrow	Rectangular	Tortoise	20
Men's Styles	Medium	Rectangular	Tortoise	19
Men's Styles	Narrow	Rectangular	Black	18
Men's Styles	Medium	Rectangular	Black	17
Men's Styles	Narrow	Square	Tortoise	16
Women's Styles	Medium	Rectangular	Tortoise	16
Women's Styles	Medium	Square	Tortoise	16
Women's Styles	Narrow	Square	Crystal	16
Men's Styles	Narrow	Square	Black	15
Women's Styles	Medium	Square	Crystal	15
Women's Styles	Narrow	Square	Black	15
Women's Styles	Narrow	Square	Tortoise	15
Women's Styles	Wide	Rectangular	Tortoise	15

Above table only showing the top 15 results

3. Home Try-On Funnel- Further Insights



Graph 2



Graph 3

6. Further Insights

- Warby Parker should be using the results of the quiz to shape their product offerings. This and the previous slide look at results of the quiz.
- The results show that for both Men and Women's style, rectangular is the most selected answer for shape.
- The quiz results also show that both across both Men and Women styles Tortoise was the most popular colour with a total of 270 people choosing this colour.
- Based on these insights of consumer preferences Warby Parker should stock glasses for both Men and Women that are rectangular in shape and are of Tortoise colour.
- However it is important to compare the quiz results to the actual purchase data to see if the quiz results carry over to actual sales. The next slide will look into this further.

3. Home Try-On Funnel- Further Insights

```sql
--Gives the total number of purchases and sale totals for each product id
SELECT product_id,
  model_name,
  style,
  color,
  count(*) AS 'Number of Purchases',
  SUM (price) AS 'Total Sales',
  price
FROM purchase
GROUP BY 1,2,3,4
ORDER BY 5 desc;
```

Query Results

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

6. Further Insights

- Looking at the purchase data for Warby Parker, the best selling model for Men's was Dawes. With 63 being sold, totalling 9450 in sales.
- For Women the best selling model was Eugene Narrow with 116 sold in total across the 2 colour options, totalling 11,020 in sales.
- Looking at the purchase data for Men's it is interesting to see that the only model that was available in the Tortoise colour had the least purchases, given that it was the most popular colour for men in the quiz.
- It would be beneficial to have the shape information available to see if the shape of this model was not rectangular. Potentially indicating shape being more important than colour when buying glasses.

3. Home Try-On Funnel- Further Insights

```sql
--Aggregating purchases and sales by style, see if men or women styles perform better
SELECT style,
  count(*) AS 'Number of Purchases',
  SUM (price) AS 'Total Sales',
  SUM (price) / count(*) AS 'Average Price'
FROM purchase
GROUP BY 1
ORDER BY 3 desc;
```

Query Results

style	Number of Purchases	Total Sales	Average Price
Women's Styles	252	28670	113
Men's Styles	243	27125	111

```sql
--Gives count of people by the style selected in the quiz
SELECT style,
  count (*) AS Count
FROM quiz
GROUP BY style
ORDER BY 2 desc;
```

Query Results

style	Count
Women's Styles	469
Men's Styles	432
I'm not sure. Let's skip it.	99

6. Further Insights

- The purchase data also shows that Women Styles outsell the Men Styles. This matches the responses we received from the quiz (graph 1). As in both instances the Women styles have more numbers. This information allows us to see Warby Parker is used slightly more by women, and could help Warby Parker to decide what gender they target more.
- The average price is also slightly higher for Women style compared to Men's, potentially showing the women are more like to spend more on their glasses then men.
- Going forward Warby Parker, should look at both the quiz results and actual purchases to help shape future decision making in terms of the products they offer as well as seeing if they are better off focusing more on female styles. Depending on if the trends found in this analysis continue in the long term.