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Warby Parker Funnel Captstone

Learn SQL from Scratch
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1. Getting Familiar with Warby Parker

Getting familiar with 'survey'

The purpose of the first task is to understand the contents of the first table, 'survey'. Within 'survey' are the user_id's of people who took the Warby Parker quiz, the questions that were asked of the users and their responses. It is good to get an idea for the data you are working with before doing anything with it.

```
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. Quiz Responses

Quiz Responses

Now that we are familiar with the data, let's look at the quiz questions and see how many responses each question got. Based on the results, we can see that for the first two questions, the quiz retained most of its users. However, in the middle of the quiz, users stopped taking the quiz and responses went down steadily as a result. I put the percentage of initial users who answered each question. The first four questions have reasonable response rates, while the last is almost half of the people who took the survey. Maybe asking when someone's last eye exam was too recent, or maybe it was because it was the last question so people didn't want to do the whole survey.

```sql
SELECT question, COUNT(DISTINCT user_id) AS 'Distinct Responses'
FROM survey
GROUP BY question;
```

Question	Distinct Responses
What are you looking for?	500 (100%)
What's your fit?	475 (95%)
What shapes do you like?	380 (76%)
What colors do you like?	361 (72%)
When was your last eye exam?	270 (54%)

3. Understanding the rest of the tables

Understanding more tables

Before we do anything with these tables, it is important to understand their contents, especially if we are planning on left joining them. This step is important, as we need to know what columns we are combining and making sure they are joinable.

```
SELECT *
FROM quiz
LIMIT 5;

SELECT *
FROM home_try_on
LIMIT 5;

SELECT *
FROM purchase
LIMIT 5;
```

home_try_on			purchase					
user_id	number_of_pairs	address	user_id	product_id	style	model_name	color	price

quiz				
user_id	style	fit	shape	color

4. Combining Tables

Combining Tables and Making Results Readable

In order to create this table, we need to use the 'Case' function of SQL to make new table columns to describe and have more readable results. For the purposes of creating a more readable table I used 'Case' but for future numerical work, I used code similar to the provided answer to make it easier to work with for future tasks.

The purpose of the left join is to have a single table with all the data to track users from when they take the quiz to if they did a home try on, whether they got 3 or 5 pairs in the try on, and if they eventually purchased. In the actual table I limited 10, but for the sake of space I put in the first four results as we are just getting a feel for the tables and the join we just did.

user_id	is_home_try_on	number_of_pairs	is_purchase
4e8118dc-bb3d-49bf-85fc-cca8d83232ac	True	3 pairs	False
291f1cca-e507-48be-b063-002b14906468	True	3 pairs	True
75122300-0736-4087-b6d8-c0c5373a1a04	False	Null	False
75bc6ebd-40cd-4e1d-a301-27ddd93b12e2	True	5 pairs	False

```
SELECT
DISTINCT quiz.user_id,
CASE
    WHEN home_try_on.user_id IS NOT
NULL
    THEN 'True'
        ELSE 'False'
    END AS 'is_home_try_on',
home_try_on.number_of_pairs,
CASE
    WHEN purchase.user_id is NOT NULL
THEN 'True'
    ELSE 'False'
END AS 'is_purchase'
FROM quiz
LEFT JOIN home_try_on
ON quiz.user_id = home_try_on.user_id
LEFT JOIN purchase
ON purchase.user_id = quiz.user_id
LIMIT 10;
```

5. Understanding the data

Conversion Rates

The overall conversion rates show that almost 50% of people who start the quiz end up making a purchase. For such a general and large scale top of funnel, this conversion rate is very good. This can be in part attributed to the fact that the quiz was successful, in that 75% of people who started the quiz finished the quiz which means the quiz was engaging and was successful in moving people through the funnel to be engaged with a home try on. Of those that did a home try on, 66% went on to make a purchase. Depending on the cost to Warby Parker to provide the home try on, being able to acquire 2 out of every three people is quite successful. However, looking at the A/B test of 3 versus 5 pair home try on success, there is a stark difference in success. The 5 pair conversion was more than 26% higher than the 3 pair conversion (79.25 to 53%). Based on the additional cost to provide the 2 extra pairs, which I don't foresee being too great, Warby based on this A/B test should provide a greater selection of shoes as it has been proven to be more successful in converting at the home try on point of the funnel

Overall Conversion Rate	Quiz Taker Conversion	Purchase % Home Try On	3 Pair Conversion	5 Pair Conversion
49.5%	75%	66%	53%	79.25%

```sql
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
100.0 * sum(is_purchase = 1) / count(*) AS
'Overall Conversion Rate',
100.0 * sum(is_home_try_on = 1) / count(*)
AS 'Quiz Taker Conversion',
100.0 * sum(is_home_try_on = 1 AND
is_purchase = 1) / sum(is_home_try_on = 1)
AS 'Purchase % Home Try On',
100.0 * sum(is_purchase = 1 AND
number_of_pairs = '3 pairs') /
sum(number_of_pairs = '3 pairs') AS '3 Pair
Conversion',
100.0 * sum(is_purchase = 1 AND
number_of_pairs = '5 pairs') /
sum(number_of_pairs = '5 pairs') AS '5 Pair
Conversion'
FROM funnel;
```

Most Common Quiz Answers

Based on the quiz results, we can see that the most popular fits are narrow (408) and medium (305). The most popular shapes are rectangular (397) and square (326). Looking at color, there is not too great of a difference as with fit and shape. However the most popular are tortoise (292), black (280) and crystal (210).

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

fit	Count
Narrow	408
Medium	305
Wide	198
I'm not sure. Let's skip it.	89

color	Count
Tortoise	292
Black	280
Crystal	210
Neutral	114
Two-Tone	104

shape	Count
Rectangular	397
Square	326
Round	180
No Preference	97

```
SELECT style, COUNT(*) AS 'Count'
FROM quiz
GROUP BY style
ORDER BY 2 DESC;

SELECT color, COUNT(*) AS 'Count'
FROM quiz
GROUP BY color
ORDER BY 2 DESC;

SELECT fit, COUNT(*) AS 'Count'
FROM quiz
GROUP BY fit
ORDER BY 2 DESC;

SELECT shape, COUNT(*) AS 'Count'
FROM quiz
GROUP BY shape
ORDER BY 2 DESC;
```

Most common quiz combinations

Knowing what combinations are most popular is important to knowing what glasses people will eventually purchase and what the company should have more of in supply. I separately looked at women's and men's answers from the quiz as men's and women's generally differ in style. However, as the data shows, all the top 6 styles are the same, and mostly in the same order. I did not include color in the groupings in order to create a more robust count that made it easier to see which physical shape was most popular combination. In general, a combination of narrow or medium with square or rectangular took up the top 4 spots in each, making them the most popular, and specifically narrow rectangular was the most popular with both groups.

```
SELECT style, fit, shape,
COUNT (*) AS 'Count'
FROM quiz
WHERE style = "Women's Styles"
GROUP BY style, fit, shape
ORDER BY Count DESC;
SELECT style, fit, shape,
COUNT (*) AS 'Count'
FROM quiz
WHERE style = "Men's Styles"
GROUP BY style, fit, shape
ORDER BY Count DESC;
```

style	fit	shape	Count
Women's Style	Narrow	Rectangular	74
Women's Style	Narrow	Square	58
Women's Style	Medium	Rectangular	55
Women's Style	Medium	Square	44
Women's Style	Narrow	Round	40
Women's Style	Wide	Rectangular	40

style	fit	shape	Count
Men's Style	Narrow	Rectangular	72
Men's Style	Medium	Rectangular	61
Men's Style	Narrow	Square	56
Men's Style	Medium	Square	38
Men's Style	Narrow	Round	30
Men's Style	Wide	Rectangular	30

Most popular price points

```
SELECT price, COUNT(*) AS "Count"
from purchase
GROUP BY price
ORDER BY 2 DESC;
```

It is important to know what price points Warby Parker is doing best at in order to know what to supply their consumers with. Based on the results, it seems as though they do the best in the 95-150 price range rather than their 50 price range. However, this may be because they are great at luring people in with the price of 50 and are able to upsell their users on a slightly more expensive pair given their role as the higher fashion brand that is also affordable.

Price	Count
95	261
150	193
50	41

Most popular model, color and style

We know what the most popular responses for fit, shape and color were for the quiz, and now we can compare those results to what was actually purchased. The styles for purchase are about equally split between men and women, just as it was in the quiz. For models, I am unfamiliar with the shapes of the names of the glasses, but based on the results "Eugene Narrow" (116) and "Dawes" (107) were their best sellers. As a result, making a comparison to the quiz results is not possible. For colors, there are many different colors, and the distribution of purchases in color is fairly spread out. Their "Jet Black" (86) was the best seller, followed by "Driftwood Fade" (63) and then "Rosewood Tortoise" (62). Based on the spread of color purchases, there is not much actionable insight. The lack of a clear favorite in color follows the quiz results.

Style	Count
Women's Style	252
Men's Style	243

Model Name	Count
Eugene Narrow	116
Dawes	107
Brady	95
Lucy	86
Olive	50
Monocle	41

Color	Count
Jet Black	86
Driftwood Fade	63
Rosewood Tortoise	62
Rose Crystal	54
Layered Tortoise Matte	52
Pearled Tortoise	50
Elderflower Crystal	44
Sea Glass Gray	43
Endangered Tortoise	41

```
SELECT model_name AS "Model Name",
COUNT(*) AS "Count"
from purchase
GROUP BY model_name
ORDER BY 2 DESC;

SELECT style, COUNT(*) AS "Count"
from purchase
GROUP BY style
ORDER BY 2 DESC;

SELECT color, COUNT(*) AS "Count"
from purchase
GROUP BY color
ORDER BY 2 DESC;
```

Most popular combinations

In combinations for the quiz, including "colors" created too many groups and as a result was not included. However this wasn't the case with the purchase record. I limited to the top five as to focus on the most popular combinations. The fact that 4/5 best sellers were at the $95 price is not surprising as it is the most popular price point. Based on the results, Warby now knows what generally most people are interested in buying, and can use this information in more top level funnel advertising and advertise Driftwood Fade glasses to men in Dawes, and Eugene Narrows in Rosewood Tortoise and Rose Crystal to women.

```
SELECT model_name AS "Model
Name", style, color, price,
COUNT(*) AS "Count"
FROM purchase
GROUP BY style, model_name,
color, price
ORDER BY 5 DESC
LIMIT 5;
```

Model Name	Style	Color	Price	Count
Dawes	Men's Style	Driftwood Fade	150	63
Eugene Narrow	Women's Style	Rosewood Tortoise	95	62
Eugene Narrow	Women's Style	Rose Crystal	95	54
Brady	Men's Style	Layered Tortoise Matte	95	52
Olive	Women's Style	Pearled Tortoise	95	50

6. Actionable Insights

1. The first actionable insight comes from the effectiveness of the home try on conversion rates. The overall conversion of people who took the quiz compared to those who did the home try on is significant. General conversion is 49.5% compared to 66% of those who did the home try on. Additionally for the home try on A/B test we saw that giving 5 pairs to try on resulted in a significant increase in conversion to purchase difference. 53% of people who got 3 pairs purchased while 79.25% of people who got 5 made a purchase. If we take this 5 pair purchase % and extrapolate it onto the entire population of people who did try on's, the percent of people who overall were converted would definitely go up and is worth implementing. Especially when the 3 pair conversion was close to the overall conversion rate.
2. Looking at the quiz results, it seems that retention on the quiz to the final question is weak. Through the first 4 questions there is solid retention, as 72% get through the first four questions. However the last question only got a 54% answer rate. Perhaps adding a different question that is not as personal as the last or removing the last question would be in the best interest in order to get more people funneled towards a home try on and eventually to a purchase.
3. While the $50 price point might be an important draw initially for those who find out about Warby Parker initially, it is important to recognize their lack of popularity when it comes down to making a purchase as they make up a small fraction of total purchases (8.3%). They could potentially increase advertising on their most popular combination glasses at the top of the funnel advertising as to draw in potential buyers with the most popular glasses.
4. The most popular style of Men's glasses is $150. Potentially focusing more on selling to men could see bigger returns based on their higher tendency to buy expensive glasses.
5. Based on the quiz results, Warby should be looking into creating new glasses styles based around the fit of "Narrow" and "Medium" and shape of "Rectangular" and "Square" as they were by far the most popular combinations from the quiz results. Narrow and Medium were on 72% of quiz responses and Rectangular and Square were in 71%. These numbers show that a significant portion of people favor these styles.
6. Given the wide spread of preference from those purchasing glasses and on the quizes, potentially decreasing the variety of colors could decrease production costs and decrease amount of storage needed to fill orders. Getting rid of one or two of the least popular colors could be something worth considering.