codecademy

Warby Parker Sales Funnel

Learn SQL from Scratch

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Question 1: What Columns Does the Table Have?

Query

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

- The Survey table has three columns (user ID, the question and the response) .
- There are 5 questions given to help determine the customer's personal style, fit and color.

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
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
When was your last eye exam?	00bf9d63-0999-43a3-9e5b-9c372e6890d2	<1 Year

question
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?

Question 2: What are the number of responses for each question?

Query

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

- 500 initially take the quiz with a final tally of 270 following through to answer the fifth and final question (54% total completion rate)

Query Results

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

Question 3A: Which Questions have lower completion rates? Why?

- Questions 3 and 5 have the lowest completion rate from the previous question (at 80% and 75%, respectively).
- Management may want to consider at least moving question 3 to the 4th position to potentially maximize total completion.
- Further they may want to try moving questions 2 and 4 in either the 2nd or 3rd position. Although they both had equal relative response rates, question 4 had less of an absolute decrease in responses (19 abandons vs.. 25).

Question	Responces	% Answered from previous question	Proposed Changed Order
1. What are you looking for?	500	100.0%	1st
2. What's your fit?	475	95.0%	2nd or 3rd
3. Which shapes do you like?	380	80.0%	4th
4. Which colors do you like?	361	95.0%	2nd or 3rd
5. When was your last eye exam?	270	74.8%	5th

Question 3B: Reasons for differing completion rates?

Query

```
SELECT response, COUNT (response)
FROM survey
WHERE question LIKE '3%'
GROUP BY 1;

SELECT response, COUNT (response)
FROM survey
WHERE question LIKE '5%'
GROUP BY 1;
```

- Question 3 and 5 don't seem to have any apparent issue with the actual answers driving survey takers to abandon. Responses look to be fairly normally distributed among all responses.
- Question 5 may turn off survey takers as personal questions can potentially polarize respondents. If there is little value derived from this question leading to a home try on product selection, then perhaps it could be discarded.
- Question 3 may simply be that the respondent didn't like the minimal choices or perhaps the textual nature of the answer didn't give them enough visual excitement to continue. Perhaps experimenting with visuals of the various shapes and increasing to more than three shapes to choose from could allow for higher completion rates.

Question 5		
response	count (response)	% of responces
1-3 Years	56	20.7%
3+ Years	37	13.7%
<1 Year	141	52.2%
Not Sure. Let's Skip It	36	13.3%

Question 3		
response	count (response)	% of responces
No Preference	29	7.6%
Rectangular	141	37.1%
Round	91	23.9%
Square	119	31.3%

Question 4: Sales funnel column names

query

```
SELECT *
FROM quiz
LIMIT 5;

SELECT *
FROM home_try_on
LIMIT 5;

SELECT *
FROM purchase
LIMIT 5;
```

- Examine the first five rows of each table.
- What are the column names?

Table	Column Name
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

Question 5: Were users with 5 pairs more likely to purchase?

Query

```
SELECT DISTINCT quiz.user_id,
   home_try_on.user_id IS NOT NULL AS
'is_home_try_on',
   home_try_on.number_of_pairs,
   purchase.user_id IS NOT NULL 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;
```

Lets find out if users who received 5 pairs to try on at home are more likely to make a purchase then those with 3 pairs

- **First we need to build a table from the existing 3 home try on funnel tables, to build a new table of customers who took the quiz, tried on 3 or 5 pairs at home, then ultimately purchased.**

Query Results

user_id	is_home_try_on	number_of_pairs	is_purchase
b3d-49bf-85fc-cca8d83232ac	1	3 pairs	0
07-48be-b063-002b14906468	1	3 pairs	1
736-4087-b6d8-c0c5373a1a04	0	Ø	0
0cd-4e1d-a301-27ddd93b12e2	1	5 pairs	0
a2b-4db6-9847-601747fa7812	1	3 pairs	1
7a6-4e6a-a5fb-8bb5440117ae	1	5 pairs	1
cf-46e4-9093-79799649d6c5	0	Ø	0
81-4916-9750-ce956c9f9bd9	0	Ø	0
bb6-449c-b7a5-03af42c97433	1	5 pairs	0
d60-4222-82cb-f6d464104298	1	3 pairs	0

Database Schema

Question 5: Were users with 5 pairs more likely to purchase?

Query

```
WITH funnel_aggregate AS (SELECT DISTINCT
quiz.user_id,
   home_try_on.user_id IS NOT NULL AS
'is_home_try_on',
   home_try_on.number_of_pairs,
   purchase.user_id IS NOT NULL 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)
SELECT COUNT (user_id) AS '#_taking_quiz',
number_of_pairs AS 'pairs_tried',
   SUM (is_home_try_on) AS '#_who_tried_on',
SUM(is_purchase) AS '#_who_purchased'
FROM funnel_aggregate
GROUP BY 2;
```

Lets find out if users who received more pairs to try on at home are more likely to make a purchase.

- **Next we need to build upon the last table to sum how many users of each test group (3 or 5 pairs) made a purchase**

Query Results

#_taking_quiz	pairs_tried	#_who_tried_on	#_who_purchased
250	Ø	0	0
379	3 pairs	379	201
371	5 pairs	371	294

Question 5: Were users with 5 pairs more likely to purchase?

Lets find out if users who received more pairs to try on at home are more likely to make a purchase.

- **Customers who try on 5 pairs were nearly 0.5x more likely to purchase than those trying only 3 pairs**
- **79% conversion (5 pairs) vs. 53% conversion (3 pairs)**
- **Ultimately 66% of users who try on, make a purchase**
- **49.5% of users taking quiz make a final purchase**
- **Management will want to weigh the incremental cost of adding 2 more pairs to try on with the profitability of the increased conversion**

number_of_pairs	#_taking_quiz	#_who_tried_on	#_who_purchased	Try on Conversion %
0	250	0	0	n/a
3 pairs	379	379	201	53.0%
5 pairs	371	371	294	**79.2%**
All	1000	750	495	66.0%

Question 6: Other sales insights

```
Query: see appendix
```

- Overall, men's and women's styles were equally as popular
- All Colors, Models and Products had significant sales % with fairly even distribution. No model/ product/color is dominating and none is a non seller

Purchase Data		
style	**COUNT (style)**	**% of Purchases**
Women's Styles	252	50.9%
Men's Styles	243	49.1%
color	**COUNT (color)**	**% of Purchases**
Jet Black	86	17.37%
Driftwood Fade	63	12.73%
Rosewood Tortoise	62	12.53%
Rose Crystal	54	10.91%
Layered Tortoise Matte	52	10.51%
Pearled Tortoise	50	10.10%
Elderflower Crystal	44	8.89%
Sea Glass Gray	43	8.69%
Endangered Tortoise	41	8.28%

model_name	**COUNT (model_name)**	**% of Purchases**
Eugene Narrow	116	23.4%
Dawes	107	21.6%
Brady	95	19.2%
Lucy	86	17.4%
Olive	50	10.1%
Monocle	41	8.3%
product_id	**COUNT (product_id)**	**% of Purchases**
3	63	12.7%
10	62	12.5%
9	54	10.9%
1	52	10.5%
6	50	10.1%
4	44	8.9%
7	44	8.9%
2	43	8.7%
8	42	8.5%
5	41	8.3%

Question 6: Other sales insights

```
Query: see appendix
```

Purchase Data		
price	COUNT (price)	% of Purchases
95	261	52.7%
150	193	39.0%
50	41	8.3%
ROUND(AVG(price), 0)		
113		

Men's Styles		
price	COUNT (price)	% of Purchases
150	107	44.0%
95	95	39.1%
50	41	16.9%
ROUND(AVG(price), 0)		
112		

Women's Styles		
price	COUNT (price)	% of Purchases
95	166	65.9%
150	86	34.1%
ROUND(AVG(price), 0)		
114		

- Average purchase price overall and men's and woman styles averaged similar at between $112-$114
- While Men's styles showed interest/purchase in all price points, Women's styles showed a 2/3 majority for the $95 product and no purchases in the $50 product.
- This may indicate that the $50 women's style products did not appeal either as a style or had no value for the price (i.e. to "cheap")
- Also may indicate that the $150 women's style products did not have as much perceived value compared to the $95 women's product (i.e. to "expensive")
- May want to investigate either lowering the price or increase the quality in the $50 and/or $150 women's style products

Question 6: Other sales insights

```
Query: see appendix
```

Quiz Responces		
COUNT (color)	color	%
292	Tortoise	29.2%
280	Black	28.0%
210	Crystal	21.0%
114	Neutral	11.4%
104	Two-Tone	10.4%
COUNT (style)	style	%
469	Women's Styles	46.9%
432	Men's Styles	43.2%
99	I'm not sure. Let's skip it.	9.9%
COUNT (shape	shape	%
397	Rectangular	39.7%
326	Square	32.6%
180	Round	18.0%
97	No Preference	9.7%
COUNT (fit)	fit	%
408	Narrow	40.8%
305	Medium	30.5%
198	Wide	19.8%
89	I'm not sure. Let's skip	8.9%

- In the Quiz, Tortoise, Black and Crystal were the most favored colors
- Small but significant % had no preference or were not sure about their style, shape or fit
- Perhaps more visual aids for style, shape or fit could help guide the respondent towards a preference or help clarify

Question 6: Other sales insights

```
Query: see appendix
```

- In the Quiz, both men's and women's styles were preferred in the color Tortoise. Those that weren't sure of a style preferred Black (with Tortoise falling to third)
- Perhaps a gender neutral style choice could be added as those unsure of men's or women's styles have a clear color deviation
- Narrow and rectangular were preferred the most regardless of style selection in quiz.

Quiz Responces			
style	**color**	**COUNT (color)**	**%**
Women's Styles	Tortoise	142	30.3%
Women's Styles	Black	126	26.9%
Women's Styles	Crystal	106	22.6%
Women's Styles	Neutral	58	12.4%
Women's Styles	Two-Tone	37	7.9%
style	**fit**	**COUNT (fit)**	**%**
Women's Styles	Narrow	189	40.3%
Women's Styles	Medium	131	27.9%
Women's Styles	Wide	103	22.0%
Women's Styles	I'm not sure. Let's skip it.	46	9.8%
style	**shape**	**COUNT (shape)**	**%**
Women's Styles	Rectangular	184	39.2%
Women's Styles	Square	158	33.7%
Women's Styles	Round	81	17.3%
Women's Styles	No Preference	46	9.8%

Quiz Responces			
style	**color**	**COUNT (color)**	**%**
I'm not sure. Let's skip it.	Black	33	33.3%
I'm not sure. Let's skip it.	Crystal	23	23.2%
I'm not sure. Let's skip it.	Tortoise	22	22.2%
I'm not sure. Let's skip it.	Neutral	12	12.1%
I'm not sure. Let's skip it.	Two-Tone	9	9.1%
style	**fit**	**COUNT (fit)**	**%**
I'm not sure. Let's skip it.	Narrow	45	45.5%
I'm not sure. Let's skip it.	Medium	32	32.3%
I'm not sure. Let's skip it.	Wide	16	16.2%
I'm not sure. Let's skip it.	I'm not sure. Let's skip it.	6	6.1%
style	**shape**	**COUNT (shape)**	**%**
I'm not sure. Let's skip it.	Rectangular	37	37.4%
I'm not sure. Let's skip it.	Square	36	36.4%
I'm not sure. Let's skip it.	Round	19	19.2%
I'm not sure. Let's skip it.	No Preference	7	7.1%

Quiz Responces			
style	**color**	**COUNT (color)**	**%**
Men's Styles	Tortoise	128	29.6%
Men's Styles	Black	121	28.0%
Men's Styles	Crystal	81	18.8%
Men's Styles	Two-Tone	58	13.4%
Men's Styles	Neutral	44	10.2%
style	**fit**	**COUNT (fit)**	**%**
Men's Styles	Narrow	174	40.3%
Men's Styles	Medium	142	32.9%
Men's Styles	Wide	79	18.3%
Men's Styles	n not sure. Let's skip	37	8.6%
style	**shape**	**COUNT (shape)**	**%**
Men's Styles	Rectangular	176	40.7%
Men's Styles	Square	132	30.6%
Men's Styles	Round	80	18.5%
Men's Styles	No Preference	44	10.2%

Appendix: Question 6 Query's

Query

```
SELECT style, COUNT (style)
FROM purchase
GROUP BY 1
ORDER BY 2 DESC;

SELECT color, COUNT (color)
FROM purchase
GROUP BY 1
ORDER BY 2 DESC;

SELECT model_name, COUNT (model_name)
FROM purchase
GROUP BY 1
ORDER BY 2 DESC;

SELECT product_id, COUNT (product_id)
FROM purchase
GROUP BY 1
ORDER BY 2 DESC;

SELECT price, COUNT (price)
FROM purchase
GROUP BY 1
ORDER BY 2 DESC;

SELECT ROUND (AVG(price),0)
FROM purchase;
```

Query

```
SELECT color, COUNT (color), style
FROM purchase
WHERE style LIKE 'Men%'
GROUP BY 1
ORDER BY 2 DESC;

SELECT model_name, COUNT (model_name),
style
FROM purchase
WHERE style LIKE 'Men%'
GROUP BY 1
ORDER BY 2 DESC;

SELECT product_id, COUNT (product_id),
style
FROM purchase
WHERE style LIKE 'Men%'
GROUP BY 1
ORDER BY 2 DESC;

SELECT price, COUNT (price), style
FROM purchase
WHERE style LIKE 'Men%'
GROUP BY 1
ORDER BY 2 DESC;

SELECT ROUND (AVG(price),0)
FROM purchase
WHERE style LIKE 'Men%';
```

Query

```
SELECT color, COUNT (color), style
FROM purchase
WHERE style LIKE 'W%'
GROUP BY 1
ORDER BY 2 DESC;

SELECT model_name, COUNT (model_name),
style
FROM purchase
WHERE style LIKE 'W%'
GROUP BY 1
ORDER BY 2 DESC;

SELECT product_id, COUNT (product_id),
style
FROM purchase
WHERE style LIKE 'W%'
GROUP BY 1
ORDER BY 2 DESC;

SELECT price, COUNT (price), style
FROM purchase
WHERE style LIKE 'W%'
GROUP BY 1
ORDER BY 2 DESC;

SELECT ROUND (AVG(price),0)
FROM purchase
WHERE style LIKE 'W%';
```

Appendix: Question 6 Query's

Query

```
SELECT COUNT (color), color
FROM quiz
GROUP BY 2
ORDER BY 1 DESC;

SELECT COUNT (style), style
FROM quiz
GROUP BY 2
ORDER BY 1 DESC;

SELECT COUNT (shape), shape
FROM quiz
GROUP BY 2
ORDER BY 1 DESC;

SELECT COUNT (fit), fit
FROM quiz
GROUP BY 2
ORDER BY 1 DESC;

SELECT style, fit, COUNT (fit)
FROM quiz
WHERE style LIKE 'W%'
GROUP BY 2
ORDER BY 3 DESC;

SELECT style, color, COUNT (color)
FROM quiz
WHERE style LIKE 'W%'
GROUP BY 2
ORDER BY 3 DESC;
```

Query

```
SELECT style, shape, COUNT (shape)
FROM quiz
WHERE style LIKE 'W%'
GROUP BY 2
ORDER BY 3 DESC;

SELECT style, color, COUNT (color)
FROM quiz
WHERE style LIKE 'I%'
GROUP BY 2
ORDER BY 3 DESC;

SELECT style, fit, COUNT (fit)
FROM quiz
WHERE style LIKE 'I%'
GROUP BY 2
ORDER BY 3 DESC;

SELECT style, shape, COUNT (shape)
FROM quiz
WHERE style LIKE 'I%'
GROUP BY 2
ORDER BY 3 DESC;
```

Query

```
SELECT style, color, COUNT (color)
FROM quiz
WHERE style LIKE 'M%'
GROUP BY 2
ORDER BY 3 DESC;

SELECT style, fit, COUNT (fit)
FROM quiz
WHERE style LIKE 'M%'
GROUP BY 2
ORDER BY 3 DESC;

SELECT style, shape, COUNT (shape)
FROM quiz
WHERE style LIKE 'M%'
GROUP BY 2
ORDER BY 3 DESC;
```