



Learn SQL from Scratch

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Overview

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Note: Tables presented in this presentation are for example purposes and do not show the full list of entries.

Getting familiar with Warby Parker



Get familiar with Warby Parker

- Warby Parker is an eyewear business who sell eyeglass frames and sunglasses.
- For each pair of eyeglasses and sunglasses sold, Warby Parker donates a pair to someone in need





Get familiar with Warby Parker

Style Quiz approach

To help their customers, Warby Parker asks these questions in their Style Quiz:

- What are you looking for?
- What's your fit?
- Which shapes do you like?
- Which colors do you like?
- When was your last eye exam?

User responses are stored in a table called `survey`. The table contains three columns named `question`, `user_id`, and `response`.

survey table		
question	user_id	response
what are you looking for?	{ id stored in hash }	Women's styles
what's your fit?	{ id stored in hash }	Medium
which shapes do you like?	{ id stored in hash }	Round

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

General Analysis





Analysis

When do users give up?

Which questions are more sensitive than others?

Looking at the results, users know what they're looking for in shape and color, but are more reluctant to answer when their last eye exam was. One reason could be that they might think that the question sounds irrelevant with respect to the other questions.

survey table	
question	responses
what are you looking for?	500
what's your fit?	475
which shapes do you like?	380
which colors do you like?	361
when was your last eye exam?	270

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



Analysis

Completion rate percentage

Now that we know *how many* of the users have completed a specific question, we can now calculate the completion percentage by **dividing the number of users completing each question by the number of users completing the previous question**. The mathematical equation is as follows:

$$\% \text{ completed} = 100 * (\text{question}_n / \text{question}_{n-1})$$

survey table	
question	response %
what are you looking for?	100%
what's your fit?	95%
which shapes do you like?	80%
which colors do you like?	95%
when was your last eye exam?	75%

A/B Testing



A/B Testing

The test

What are we testing?

For 50% of the users, we're going to give 3 pairs of eyeglasses to one group and 5 pairs to another group of users.

We'll be working with *three* tables named `quiz`, `home_try_on`, and `purchase`.

Tables on the next slide!



A/B Testing

The test

```
SELECT *  
FROM quiz;
```

```
SELECT *  
FROM home_try_on;
```

```
SELECT *  
FROM purchase;
```

purchase table

user_id	product_id	style	model_name	color	price
{ hashed id }	8	Women's Styles	Lucy	Jet Black	150
{ hashed id }	7	Women's Styles	Lucy	Elderflower Crystal	150
{ hashed id }	4	Men's Styles	Dawes	Jet Black	150

home_try_on table

user_id	number_of_pairs	address
{ hashed id }	5 pairs	145 New York 9a
{ hashed id }	5 pairs	383 Madison Ave
{ hashed id }	5 pairs	287 Pell St

quiz table

user_id	style	fit	shape	color
{ hashed id }	Women's Styles	Medium	Rectangular	Tortoise
{ hashed id }	Women's Styles	Narrow	Round	Black
{ hashed id }	Women's Styles	Wide	Rectangular	Two-Tone

A/B Testing

Building the Funnel

We can combine all the tables from the previous slide using a `LEFT JOIN` starting from the top of the funnel `browse` with the bottom of the funnel `purchase`.

```
SELECT DISTINCT q.user_id,
CASE
  WHEN hto.user_id IS NOT NULL THEN 'True'
  WHEN hto.user_id IS NULL THEN 'False'
END AS 'is_home_try_on',
hto.number_of_pairs,
CASE
  WHEN p.user_id IS NOT NULL THEN 'True'
  WHEN p.user_id IS NULL THEN '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 p.user_id = q.user_id
```

Note: We are going to alias this table as `funnel1` to save space in the next couple of slides!

built funnel table			
user_id	is_home_try_on	number_of_pairs	is_purchase
{ hashed id }	True	3 pairs	False
{ hashed id }	True	3 pairs	True
{ hashed id }	False	Null	False



A/B Testing

Did the home-try on test have significant impact?

Answer is **YES**.

As we can see from the table, users who were given 5 pairs of eyeglasses were more likely to purchase (294 users) than users who were only given 3 to try on (201 users)

Vice versely, users who were given 3 pairs were more reluctant to purchase (178 users) than users who were given 5 to try on (77 users).

Therefore, the data here *clearly* suggests that the more pairs users are given to try on, the more *likely* they are to purchase.

```
WITH funnels AS ( ... )  
SELECT DISTINCT number_of_pairs, is_purchase, COUNT(*) AS  
  'purchased_items'  
FROM funnels  
GROUP BY 1, 2;
```

home_try impact table		
number_of_pairs	is_purchase	purchased_items
NULL (with no test)	0 (False)	250
3 pairs	0 (False)	178
3 pairs	1 (True)	201
5 pairs	0 (False)	77
5 pairs	1 (True)	294

A/B Testing

Conversion analysis

In this analysis, 75% of the users were A/B tested to receive a 3 or 5 pair. From this group, 66% of the users converted from checkout to purchase phase.

Therefore, from the 750 people, 495 converted to purchase, which translates to a percent difference of about ~41%.

Since the percent difference is *lower* than 50%, that means that more than half of the participants converted, which means that the campaign was successful.

```
WITH funnels AS (SELECT quiz.user_id,
    home_try_on.user_id IS NOT NULL AS 'is_home_try_on',
    purchase.user_id IS NOT NULL AS 'is_purchase'
FROM quiz
LEFT JOIN home_try_on
    ON home_try_on.user_id = quiz.user_id
LEFT JOIN purchase
    ON purchase.user_id = home_try_on.user_id)
SELECT SUM(is_home_try_on) AS 'num_home_try_on',
    SUM(is_purchase) AS 'num_purchase',
    1.0 * SUM(is_home_try_on) / COUNT(user_id) AS
    'browse_to_checkout',
    1.0 * SUM(is_purchase) / SUM(is_home_try_on) AS
    'checkout_to_purchase'
FROM funnels;
```

built conversion table			
num_home_try_on	num_purchase	browse_to_checkout	checkout_to_purchase
750	495	.75	.66

Individual Table Analysis





Individual Table Analysis

Top 5 style quiz results

Looking at the data, we can see that *Rectangular* and *Square* shape models are more popular amongst customers than *Round* alternatives.

In addition, we can also deduce that women, in general, are slightly more drawn into purchasing eyewear than men due to their higher participation in the quiz than men.

```
SELECT style,
       model_name,
       COUNT(*) AS 'number_of_purchases'
FROM purchase
GROUP BY 1, 2;
```

quiz table		
style	shape	results
Women's Styles	Rectangular	184
Men's Styles	Rectangular	176
Women's Styles	Square	158
Men's Styles	Square	132
Women's Styles	Round	81



Individual Table Analysis

What was the most common type of purchase made?

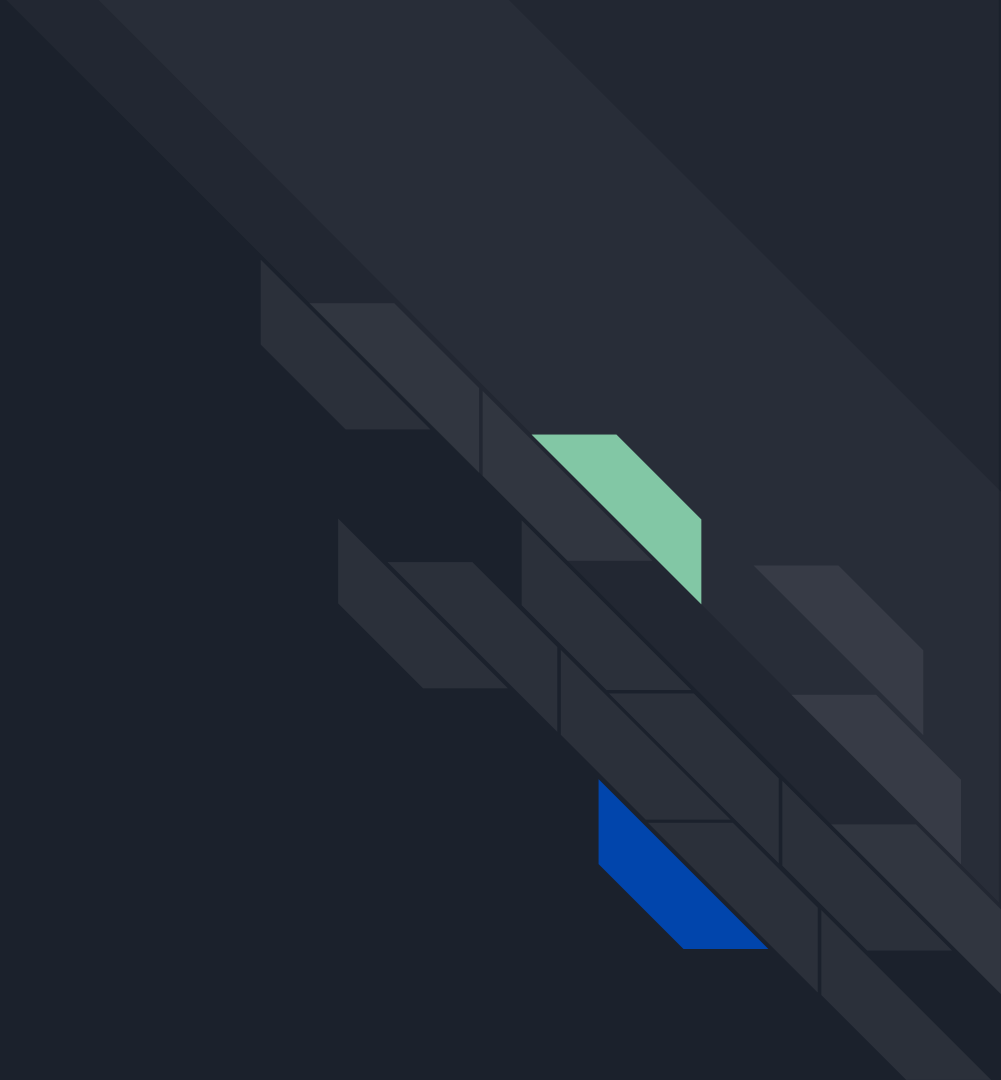
In terms of *Men's Styles*, we can see that *Brady* and *Dawes* are selling better than *Monocle*, with *Dawes* having the most purchases of 107 items in the data provided.

In terms of *Women's Styles*, we can see that *Eugene Narrow* and *Lucy* are selling better than *Olive*, with *Eugene Narrow* having the most purchases of 116 items in the data provided.

```
SELECT style,
       shape,
       COUNT(*) AS 'results'
FROM quiz
GROUP BY 1, 2
ORDER BY 3 DESC
LIMIT 5;
```

purchase table		
style	model_name	purchases
Men's Styles	Brady	95
Men's Styles	Dawes	107
Men's Styles	Monocle	41
Women's Styles	Eugene Narrow	116
Women's Styles	Lucy	86
Women's Styles	Olive	50

Conclusion





Conclusion

We clearly saw that the more pairs users try on at home, the more likely they are to convert and purchase.

Therefore, we can derive that Warby Parker's A/B testing campaign was successful using SQL and query analysis to come up with an educated conclusion.