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Warby Park

Analyze Usage Funnels with SQL

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28th DEC 2020

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T1. Sample of Survey Table

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

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

Survey

T2 & T3. Users "give up" at different points in the survey. *Q*5 'When was your last eye exam?' has the lowest score of 75%. Main reasons are:

- Most people don't remember the last time they had their eyes examined;
- majority of people haven't had their eyes examined for a long time;
- people start to get 'weary' after each question, especially towards the end of the survey questions, start to lose interests pretty quickly.
- Probably to 'hook' user on, use an interesting question, such as 'Which celebrity you admire who has a really cool looking glass-wear?'

%user_ answer_Q1	%user_ answer_Q2	%user_ answer_Q3	%user_ answer_Q4	%user_ answer_Q5
100.0	95.0	80.0	95.0	75.0

```
-- T2:
SELECT question,
COUNT(DISTINCT user_id)
FROM survey
GROUP BY question
ORDER BY question;
--
 Q1: 500; Q2:475; Q3:380; Q4:361;  Q5:270

-- T3:
SELECT 100.0 * 500/500
AS '%user_answer_Q1',
100.0 * 475/500
 AS '%user_answer_Q2',
100.0 * 380/475
AS '%user_answer_Q3',
100.0 * 361/380
AS '%user_answer_Q4',
100.0 * 270/361
AS '%user_answer_Q5'
FROM survey
LIMIT 1;
```

T4. Purchase Funnel:

- Take the Style Quiz → Home Try-On → Purchase the Perfect Pair of Glasses;
- During the Home Try-On stage, we will be conducting an 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
- The data will be distributed across three tables:
  - Quiz, home_try_on, purchase

```
SELECT * FROM quiz LIMIT 5;
SELECT * FROM home_try_on LIMIT 5;
SELECT * FROM purchase LIMIT 5;
```

user_id	style	fit	shape	color	
4e8118dc-bb3d-49bf-85fc-cca8d83232ac	Women's Styles	Medium	Rectangular	Tortoise	
user_id	**number_of_pairs**	**address**			
d8addd87-3217-4429-9a01-d56d68111da7	5 pairs	145 New York 9a			
user_id	**product_id**	**style**	**model_name**	**color**	**price**
00a9dd17-36c8-430c-9d76-df49d4197dcf	8	Women's Styles	Lucy	Jet Black	150

T5. Combine quiz, home_try_on and purchase table:

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		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 home_try_on.user_id = quiz.user_id
LEFT JOIN purchase        ON purchase.user_id = home_try_on.user_id
LIMIT 10;
```

T6. Analysis:

- Overalll conversion rate is almost 50%;
- 66% users purchased after try_on;
- 75% users tried on after taking the quiz.

num_quiz	num_home_try_on	num_ purchase	%quiz_to_ home_try_on	%quiz_to_ purchase	%try_on_to_ purchase
1000	750	495	75.0	49.5	66.0

```
WITH funnels 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 quiz.user_id = purchase.user_id)
SELECT    --number_of_pairs,
  COUNT(user_id) AS 'num_quiz',
  SUM(is_home_try_on) AS 'num_home_try_on',
  SUM(is_purchase) AS 'num_purchase',
 100.0 * SUM(is_home_try_on) / COUNT(user_id) AS '%quiz_to_home_try_on',
 100.0 * SUM(is_purchase) / COUNT(user_id) AS '%quiz_to_purchase',
 100.0 * SUM(is_purchase) / SUM(is_home_try_on) AS '%try_on_to_purchase‘
FROM funnels;
```

T6+. Analysis by Group (tryon 3 pairs vs 5 pairs):

79% of users end up purchasing when tried 5 pairs on;
53% of users end up purchasing when tried 3 pairs on.

number_of_pairs	num_home_try_on	num_purchase	%home_try_on_to_purchase
3 pairs	379	201	53.0
5 pairs	371	294	79.0

```
WITH funnels 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 quiz.user_id = purchase.user_id)
SELECT    number_of_pairs,
  SUM(is_home_try_on) AS 'num_home_try_on',
  SUM(is_purchase) AS 'num_purchase',
  ROUND(100 * SUM(is_purchase) / SUM (is_home_try_on)) AS '%home_try_on_to_purchase'
FROM funnels
WHERE number_of_pairs IS NOT NULL
GROUP BY number_of_pairs
ORDER BY number_of_pairs;
```

T6+. Purcahse Analysis :

Style	‘most_common_style’
Women’s Styles	469
product_id	‘most_popular_product’
3	63
model_name	‘most_popular_model’
Eugene Narrow	116
color	‘most_popular_color’
Jet Black	86
price	‘most_common_purchase_price’
$95	261

```
SELECT style, COUNT(style) AS ‘most_common_style’
FROM quiz GROUP BY style  ORDER BY style DESC
LIMIT 1;

SELECT product_id,  COUNT(product_id)
AS ‘most_popular_product’
FROM purchase GROUP BY product_id
ORDER BY COUNT(product_id) DESC  LIMIT 1;

SELECT model_name,  COUNT(model_name)
AS ‘most_popular_model’
FROM purchase  GROUP BY model_name
ORDER BY COUNT(model_name) DESC  LIMIT 1;

SELECT color,  COUNT(color)
AS ‘most_popular_color’
FROM purchase GROUP BY color
ORDER BY COUNT(color) DESC  LIMIT 1;
```

Conclusions:

1. Overall conversion rate is almost 50%; (from quiz to purchase)
2. 66% users purchased after home_try_on; (75% users tried on after taking the quiz)
3. 79% of users end up purchasing when tried 5 pairs on; 53% of users end up purchasing when tried 3 pairs on.
4. The most common style is “Women’s style”, the most popular product is ‘product 3’, the most popular model name is ‘Eugene Narrow’, and ‘Jet Black’ is the most sort after color, price tag of $95 seems to be most acceptable, in the middle price range, and below the psychologic ‘100’ dollars.

Suggestions:

1. Change the last question in survey, as only 75% users answer it, in order to ‘hook’ users on, I suggest asking an interesting question, such as ‘Which celebrity you admire who has a really cool looking glass-wear?’
2. I suggest conducting a ‘C-test’ during home-try-on stage, eg, sending 7 pairs for home-try-on, and do another analysis in 6 months to see if it results a higher rate of purchase;
3. Stock more product 3, ‘women’s style’ in jet black color, with ‘Eugene Narrow’ model and priced at $95, especially around Christmas season, valentines day, mother’s day and summer holidays.