Capstone Project:
Usage Funnels with Warby Parker

Codecademy: LEARN SQL FROM SCRATCH

By
Eric McAvoy
Polk County GIS

12/20/2018

Quiz Funnel

1. Quiz Funnel – Table Familiarization

Q: *Select all columns from the first 10 rows. What columns does the table have?*
A: The table (below) has question, user_id, and response columns. The table below was generated by the query (below right).

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

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

2. Quiz Funnel – Question Completion Rates

Q: *What is the number of responses for each question?*
A: The number of responses for each question is contained in the query table (right) and was generated by the query (below).

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

question	COUNT(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

3. Quiz Funnel – Question Completion Rates

Q: *Which question(s) of the quiz have a lower completion rates?*
A: Questions 3, 4, and 5 have lower completion rates.

Q: *What do you think is the reason?*
A: Questions 3 and 4 ask the user to determine their personal preference and choose between multiple options. While this may seem simple, too many options can trigger Choice Paralysis and scare users off. Question 5 similarly asks a multiple choice question, then asks a personal question about the user's medical history. This may make users uncomfortable.

The response rate table (right) shows each question and the rate of response from the total user base. It is generated by the query (below).

```
SELECT question,
  ((count(user_id)/500.)* 100) as response_rate
FROM survey
GROUP BY question;
```

question	response_rate
1. What are you looking for?	100.0
2. What's your fit?	95.0
3. Which shapes do you like?	76.0
4. Which colors do you like?	72.2
5. When was your last eye exam?	54.0

Home Try On Funnel

4.1 Home Try On Funnel – quiz table

Q: *What are the column names?*
A: The Column names are user_id, style, fit, shape, color.

The quiz table is a record of user's interaction with the quiz.

```
SELECT *
FROM quiz
limit 5;
```

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

4.2 Home Try On Funnel – home_try_on table

Q: *What are the column names?*
A: The Column names are user_id, number_of_pairs, address.

The quiz table is a record of user's home try on stage including how many pairs they were sent and where those pairs were sent to.

```
SELECT *
FROM home_try_on
limit 5;
```

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

4.3 Home Try On Funnel – purchase table

Q: *What are the column names?*
A: The Column names are user_id, product_id, model_name, color, price.

The quiz table is a record of user's purchase, including product information.

```
SELECT *
FROM purchase
limit 5;
```

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

Conversion Rates

5. New Table – Aggregated Table

Q: *Create an new table with the following layout. {user_id, is_home_try_on, number_of_pairs, is_purchase}*
A: The table below was generated by the query (below right).

user_id	is_home_try_on	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
75bc6ebd-40cd-4e1d-a301-27ddd93b12e2	True	5 pairs	False
ce965c4d-7a2b-4db6-9847-601747fa7812	True	3 pairs	True
28867d12-27a6-4e6a-a5fb-8bb5440117ae	True	5 pairs	True
5a7a7e13-fbcf-46e4-9093-79799649d6c5	False		False
0143cb8b-bb81-4916-9750-ce956c9f9bd9	False		False
a4ccc1b3-cbb6-449c-b7a5-03af42c97433	True	5 pairs	False
b1dded76-cd60-4222-82cb-f6d464104298	True	3 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 AND
          purchase.user_ID IS NOT 0 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;
```

6.1 Analysis – Conversion Rates

The table (below) is an aggregation and summary of the quiz, home_try_on, and purchase tables. It is generated by the query (right).

Q. *What is the Overall conversion rate?*
A. 49.5% of users who begin the quiz will end up making a purchase.

Q. Compare the conversion from quiz to home_try_on and home_try_on to purchase?
A. 75% of users who take the Quiz proceed to the home try on. 66% of users who do the Home try on purchase from Warby Parker.

```
WITH analysis as (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 AND purchase.user_ID IS NOT 0 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)
SELECT COUNT(user_id) AS 'users',
  SUM(is_home_try_on IS NOT 'False') AS 'num_try_on',
  SUM(is_purchase IS NOT 'False') as 'num_purchase',
  1.0 * SUM(is_home_try_on IS NOT 'False') / COUNT(user_id) as 'browse_try',
  1.0 * SUM(is_purchase IS NOT 'False') / SUM(is_home_try_on IS NOT 'False') as
'try_buy',
  1.0 * SUM(is_purchase IS NOT 'False') / COUNT(user_id) AS
'Total_Purchase_Rate'
FROM analysis;
```

users	num_try_on	num_purchase	browse_try	try_buy	Total_Purchase_rate
1000	750	495	0.75	0.66	0.495

6.2 Analysis – Conversion Rates – Home Try On “3 Pairs”

The table (below) is an aggregation and summary of the quiz, home_try_on, and purchase tables WHERE users received 3 Pairs of Home Try On glasses. It is generated by the query (right).

Q. *What is the Overall conversion rate?*
A. 53% of users who receive 3 pairs of Home Try On will end up making a purchase.

Q. What is the total revenue generated?
A. Users who receive 3 pairs of Home Try On spent $22,765, with an average purchase of $113.26.

```
WITH analysis as (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 AS 'pairs',
  CASE
    WHEN purchase.user_id IS NOT NULL AND purchase.user_ID IS NOT 0 THEN 'True'
    ELSE 'False'
  END AS 'is_purchase',
  purchase.price AS 'sales'
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 'users',
  SUM(is_home_try_on IS NOT 'False') AS 'num_try_on',
  SUM(is_purchase IS NOT 'False') as 'num_purchase',
  1.0 * SUM(is_home_try_on IS NOT 'False') / COUNT(user_id) as 'browse_try',
  1.0 * SUM(is_purchase IS NOT 'False') / SUM(is_home_try_on IS NOT 'False') as
'try_buy',
  1.0 * SUM(is_purchase IS NOT 'False') / COUNT(user_id) AS
'Total_Purchase_Rate',
  SUM(sales)
FROM analysis
WHERE pairs IS `3 pairs';
```

users	num_try_on	num_purchase	browse_try	try_buy	Total_Purchase_rate	SUM(sales)
379	379	201	1.0	0.530343007915567	0.530343007915567	22765

6.3 Analysis – Conversion Rates – Home Try On “5 Pairs”

The table (below) is an aggregation and summary of the quiz, home_try_on, and purchase tables WHERE users received 5 Pairs of Home Try On glasses. It is generated by the query (right).

Q. *What is the Overall conversion rate?*
A. 79% of users who receive 5 pairs of Home Try On will end up making a purchase.

Q. What is the total revenue generated?
A. Users who receive 5 pairs of Home Try On spent $33,030, with an average purchase of $112.35.

```
WITH analysis as (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 AS 'pairs',
  CASE
    WHEN purchase.user_id IS NOT NULL AND purchase.user_ID IS NOT 0 THEN 'True'
    ELSE 'False'
  END AS 'is_purchase',
  purchase.price AS 'sales'
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 'users',
  SUM(is_home_try_on IS NOT 'False') AS 'num_try_on',
  SUM(is_purchase IS NOT 'False') as 'num_purchase',
  1.0 * SUM(is_home_try_on IS NOT 'False') / COUNT(user_id) as 'browse_try',
  1.0 * SUM(is_purchase IS NOT 'False') / SUM(is_home_try_on IS NOT 'False') as
'try_buy',
  1.0 * SUM(is_purchase IS NOT 'False') / COUNT(user_id) AS
'Total_Purchase_Rate',
  SUM(sales)
FROM analysis
WHERE pairs IS `5 pairs';
```

users	num_try_on	num_purchase	browse_try	try_buy	Total_Purchase_rate	SUM(sales)
371	371	294	1.0	0.792452830188679	0.792452830188679	33030

6.3 Analysis – Conversion Rates – Purchase Results

The table (below) is an aggregation and summary of the quiz, home_try_on, and purchase tables WHERE completed a purchase. It is generated by the query (right).

Q. *What information is interesting here?*
A. No user who chose “I'm not sure. Let's skip it.” in the style question of the Quiz made a purchase. Women’s and Men’s Styles are near equal in popularity among users making a purchase.

```
SELECT DISTINCT count(quiz.user_id) AS ‘users’,
  quiz.style,
  CASE
    WHEN purchase.user_id IS NOT NULL AND purchase.user_ID IS NOT 0 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
WHERE is_purchase IS NOT 'False'
GROUP BY quiz.style;
```

users	style	is_purchase
243	Men's Styles	True
252	Women's Styles	True

6.4 Analysis – Conversion Rates – Purchase Results

The table (below) is an aggregation and summary of the quiz, home_try_on, and purchase tables WHERE completed a purchase. It is generated by the query (right).

Q. *What information is interesting here?*
A. Jet Black is by far the most popular color. Endangered Tortoise may not be a good name for a color.

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

```
SELECT DISTINCT count(quiz.user_id) AS ‘users’,
  quiz.style,
  CASE
    WHEN purchase.user_id IS NOT NULL AND purchase.user_ID IS NOT 0 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
WHERE is_purchase IS NOT 'False'
GROUP BY quiz.style;
```

Take Away Results

1. The 5 Pair “Home Try On” trial is very successful and increases purchases by 26% when compared to the 3 Pair trial.
2. Average dollar total per purchase is relatively unchanged between the 2 “Home Try On” Models.
3. The Quiz does an excellent job of filtering out users who do not actually intend to make a purchase.